JOURNAL OF CYCLE RESEARCH

Vol. 9, No. 1

January 1960

JOURNAL OF CYCLE RESEARCH

Vol. 9, No. 1 January 1960

Contents

Journal of Cycle Research is published quarterly in January, April, July, and October of each year by the Foundation for the Study of Cycles at East Brady, Pennsylvania. The subscription rate is $4.00 a year. Single copies are $1.00 each. Entered as second class matter at the post office at East Brady, Pennsylvania with additional entry at Dexter, Michigan. Publication office, 680 West End Avenue, New York 25, New York

CORRESPONDENCE BETWEEN TCHIJEVSKY'S INDEX OF MASS HUMAN EXCITABILITY AND SUNSPOT MAXIMA 500 B.C. – A.D. 1922

BY EDWARD R. DEWEY

ABSTRACT

Schove's dates of sunspot maxima and Tchijevsky's Index of Mass Human Excitability, 500 B.C.—A.D. 1922, are compared to see if, as believed by Tchijevsky, there is significant correlation between the two.

The correspondence over the period of time for which telescopic observations of sunspots were available to Tchijevsky (1610—1922) is found to be remarkable.

Comparison is then made between dates of sunspot maxima *prior* to 1610 (for which period of time Tchijevsky lacked complete information) and (a) crests of the index and (b) numerical values of the index.

When crests of the index, 500 B.C.—A.D. 1610, are compared with sunspot maxima, as now determined, the association is found to be no better than chance.

If, however, dates of sunspot maxima are adjusted to take account of latitudinal passage, we find a definite tendency for crests to group close to dates of maxima, Using all values of the index, 500 B.C.—A.D. 1610, shows a similar tendency. Some association between sunspottedness and mass human excitability seems probable.

The tendency for mass human excitability to *precede* the corresponding sunspot maximum adds weight to the theory of latitudinal passage. Also, it suggests that emanations from the spots themselves are not the cause of any associated excitability. Rather, insofar as there may be an association, it would seem to have to do either (a) with an *increase* in the number of spots, or (b) with forces progressing simultaneously over the face of the sun and the face of the earth.

The correlation between the index of mass human excitability and the dates of sunspot maxima is variable. This fact may result from a concurrent cyclic force slightly longer than the sunspot cycle, which is first in phase with sunspot maxima, then out of phase with it, then in phase with it again. Such a possibility should be investigated.

In 1924, A. L. Tchijevšky advanced the theory (a) that mass human excitability occurred in waves and that there were, typically, nine of these waves to the century, (b) that there were nine sunspot maxima to the century, (c) that the sunspot maxima came more or less at the same time as the periods of mass human excitability, and (d) that solar radiation, associated with sunspots, was the cause of the mass human excitability. (Tchijevsky, 1924.)

In the support of his theory Tchijevsky presented an Index of Mass Human Excitability, 500 B.C.—A.D. 1922. (See Fig. 1 and Fig. 2.)

Against this index, Tchijevsky plotted, by means of dots, the sunspot maxima known in his day. The correspondence of sunspot maxima and peaks of mass excitability from 1600 to

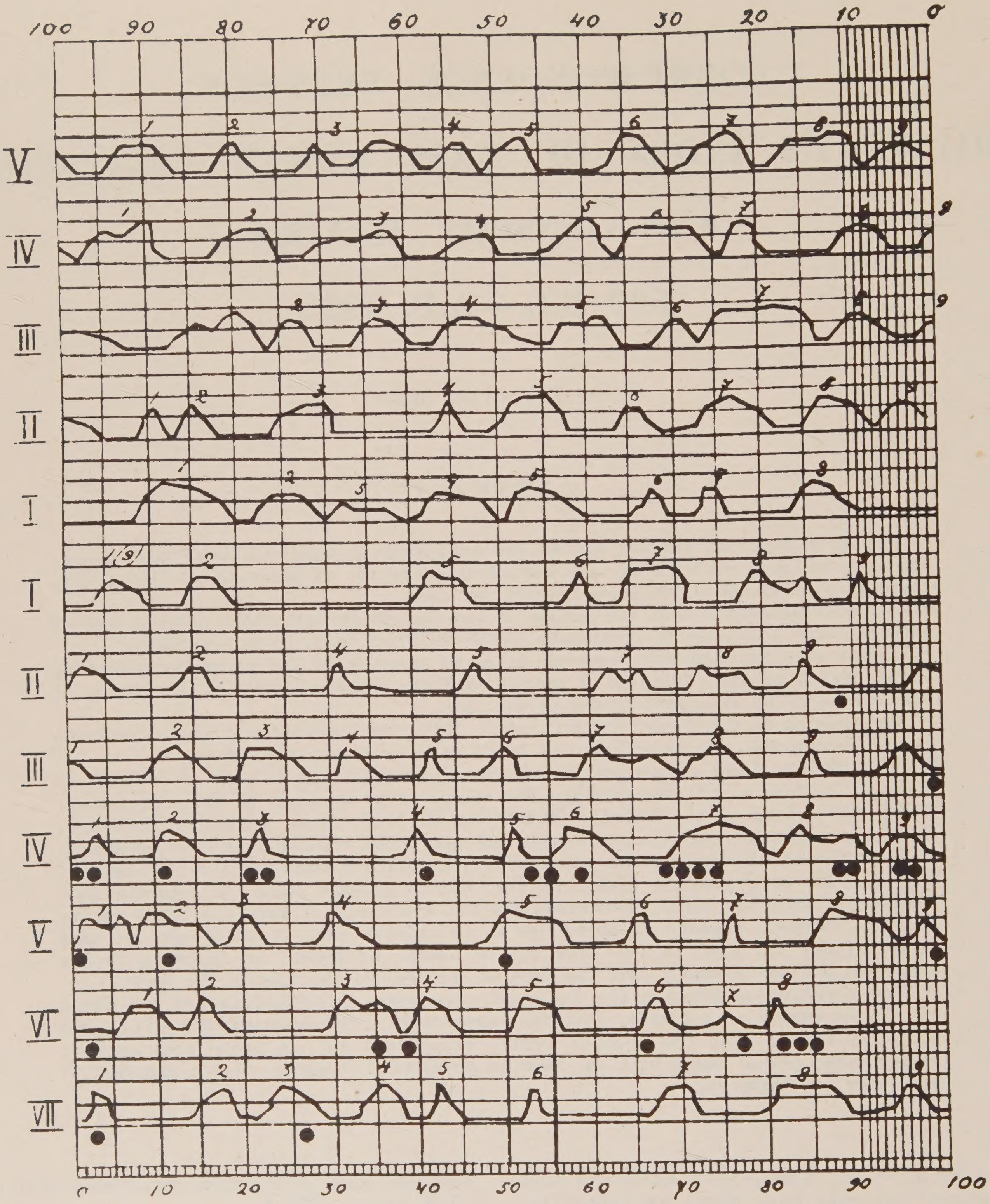

Fig. 1

Tchijevsky's Index of Mass Human Excitability, 500 B.C.—A.D. 1899. The dots represent the years of sunspottedness as they were known to Tchijevsky.

A translation of Tchijevsky's caption reads as follows: "The fluctuations' mean curves of the universal historical process on all the surface of the earth during the period from V Century B.C. till XX Century A.D.

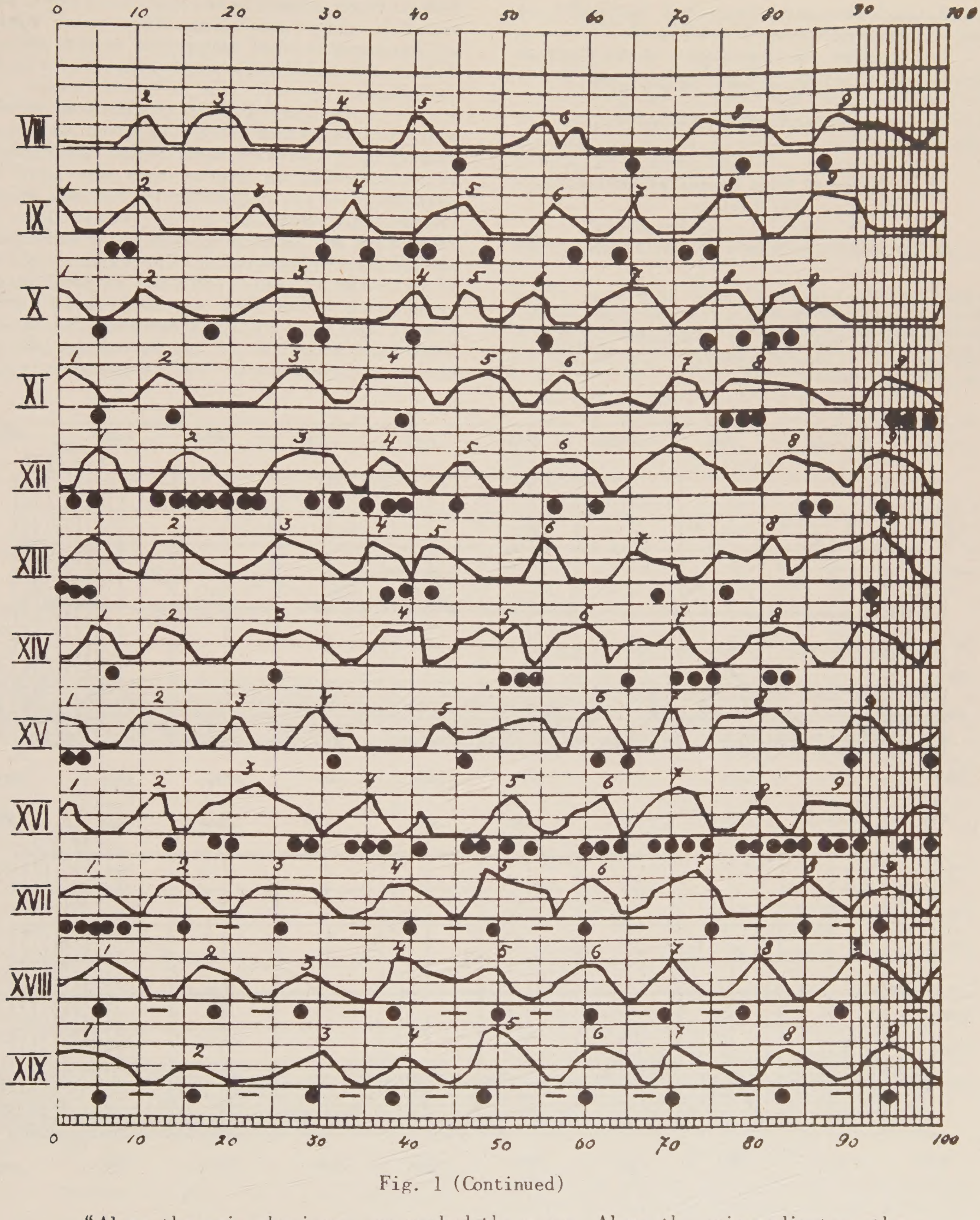

Fig. 1 (Continued)

"Along the axis abscissae are marked the years. Along the axis ordinates, the quantity of important historical events. Dots mark the pre-telescopic and later—astronomical data of the sunspot maximum. Hyphens mark its minimum."

For a comparison of Tchijevsky's index and actual sunspot numbers, 1749—1922, see Fig. 2.

1922 (and for certain other periods) is indeed striking. (Fig. 1 and Fig. 2.)*

The purpose of this paper is to examine Tchijevsky's theory in the light of additional information about the times of sunspot maxima, and in the light of improved techniques for cycle analysis.

Nine Waves of Mass Human Excitability Per Century

Assuming the accuracy of the index, it is clear that mass human excitability does recur in waves or cycles. It is also clear by inspection that there are usually nine waves of excitability per century, as stated by Tchijevsky.

For a more precise determination, it is necessary to define "wave." For our purposes we will call a wave an oscillation, the highest value of which is higher than the four or more immediately preceding values and which is also followed by a low value that is lower than the four or more values immediately preceding the low value. The highest value is called the "crest." (If two or more years have equal value they are considered to be a unit and measurements are made backward from their midpoint. If, as in two instances, a choice is possible, the decision is made

*The numerical values, read from Fig. 1 and Fig. 2, are published in a paper by S. L. Horner called "Tchijevsky's Index of Mass Human Excitability, 500 B.C.—A.D. 1922," printed in the *Journal of Cycle Research*, Vol. 9, No. 1, pp. 23-24, January, 1960.

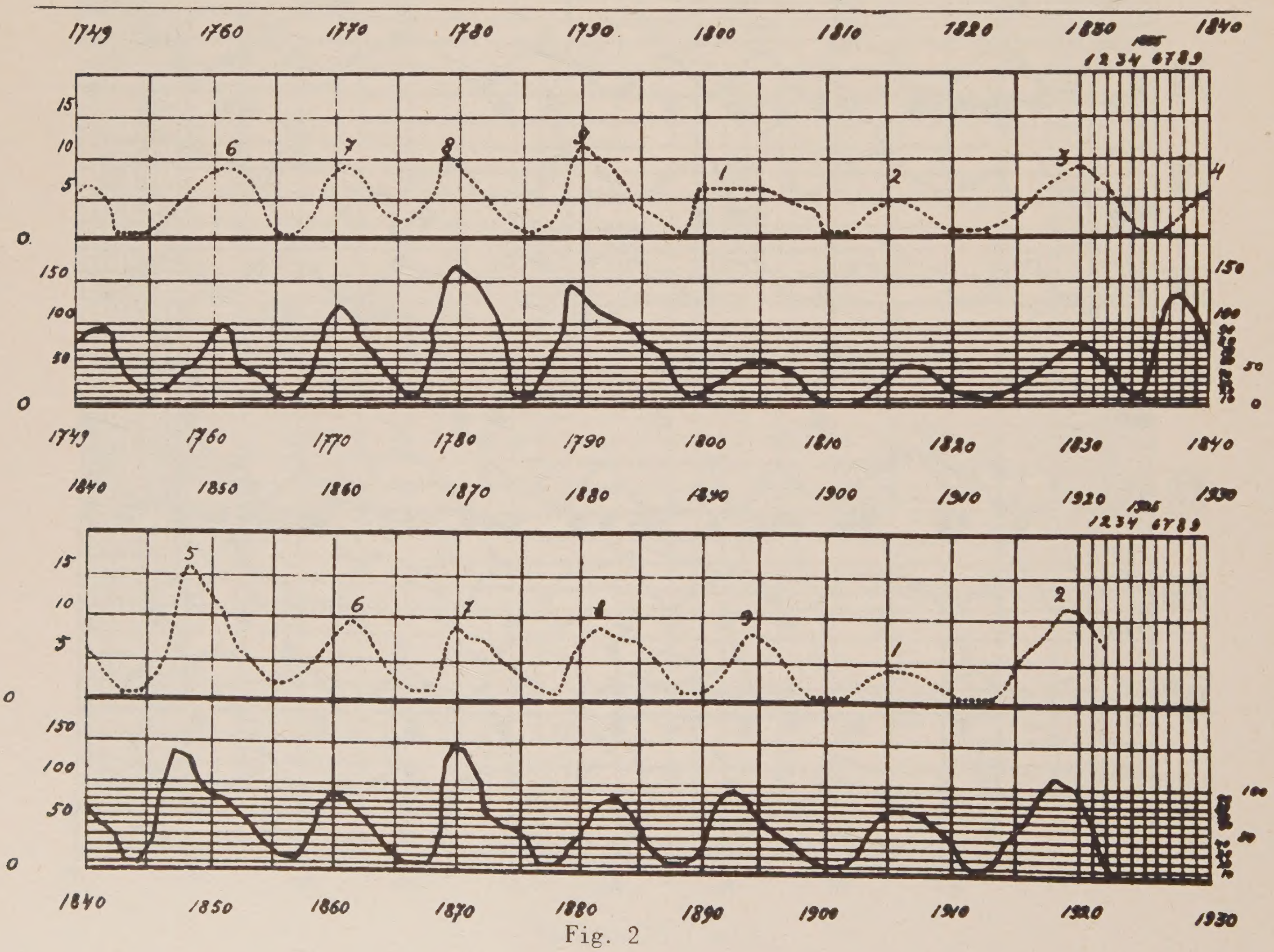

Fig. 2

A comparison of Tchijevsky's Index of Mass Human Excitability and actual sunspot numbers, 1749—1922.

A translation of Tchijevsky's caption reads as follows: "Parallelism of curves of sunspot activity (below) and the universal human military-political activity (above) from 1749 to 1922."

in favor of the crest associated with the larger number of large values.)

The number of crests of mass human excitability per century found by Tchijevsky and the number found by applying the method suggested above to the year-by-year record of the index which we read from Tchijevsky's charts are shown in Table 1. It is clear that, although the two methods of selection give slightly different results, Tchijevsky's method of subjective choice and the method suggested above are in substantial agreement. In fact, over the entire period from 500 B.C. to A.D. 1899, both methods show exactly the same number of crests (209). This is an average of 8.7 per century.

The advantage of the method that I have used is that, once the standards for measurement have been set, the application to any particular crest is purely objective.

Table 1

Number of Crests per Century in

Tchijevsky's Index of Mass Human Excitability

	Number of Crests	
Centuries*	As determined by Tchijevsky	As determined by the method described in the text
-500 to -401 incl.	9	10
-400 to -301 incl.	9	8
-300 to -201 incl.	9	9
-200 to -101 incl.	9	9
-100 to -1 incl.	8	7
0 to 99 incl.	7	8
100 to 199 incl.	8	8
200 to 299 incl.	9	9
300 to 399 incl.	9	9
400 to 499 incl.	9	8
500 to 599 incl.	8	8
600 to 699 incl.	9	8
700 to 799 incl.	7	7
800 to 899 incl.	9	9
900 to 999 incl.	9	9
1000 to 1099 incl.	9	9
1100 to 1199 incl.	9	9
1200 to 1299 incl.	9	9
1300 to 1399 incl.	9	9
1400 to 1499 incl.	9	10
1500 to 1599 incl.	9	11
1600 to 1699 incl.	9	8
1700 to 1799 incl.	9	9
1800 to 1899 incl.	9	9
Total	209	209
Average	8.7	8.7

*In accordance with astronomical convention, minus years are used instead of B.C. years. According to this system, the year 1 B.C. becomes year 0. The year 2 B.C. becomes year -1, etc.

Nine Sunspot Maxima Per Century

The tendency of sunspots to recur at an average of about 11.1-year intervals and, hence, at about nine per century, is well known. (Schove, 1956).

Correspondence of Sunspot Maxima and Crests of the Mass Human Excitability Index

We have seen that there are nine sunspot maxima per century and approximately nine crests of mass human excitability per century. Do the dates of these two series of events correspond more nearly than they would as a result of a purely chance arrangement?

It is obvious from simple inspection of Fig. 1 and Fig. 2 that, from 1610 to 1922 they do. The correspondence prior to 1610 is variable.

Astronomical observations of sunspots began in 1610 (Anderson, 1939). Prior to that time the dates of maxima are estimated from reports of aurorae, and of spots seen through haze or smoke, (Schove, 1953). We can assume, I think, that the years selected as years of maxima are generally years of more than usual spottedness. They are not, however, necessarily the years of absolute maximum. They might be, and probably often are, a year or two, or even more, one way or the other from the absolute crest of sunspottedness as it would be measured today. (Schove, 1953) The result of this fact is that if there is any correspondence between sunspottedness and mass human excitability it will be less exact for the years prior to 1610.

Also, in connection with the Index of Mass Human Excitability, it should be noted that the historical data are presumably much less complete for the earlier years, and that the index, therefore, is probably less reliable for the early years.

Both of these circumstances should make the correspondence less exact for the earlier years, but, if there is a correlation, it should be possible to determine it statistically, because the plus and minus errors of dating should largely offset each other.

The Analysis

Let us start our analysis by comparing Schove's dates of sunspot maxima with the dates of crest of Tchijevsky's index. See Table 2. The crests were selected objectively as defined above.

Study of this table shows 207 sunspot maxima from 500 B.C. forward. There are seven

Table 2

Schove's Dates of Sunspot Maxima, Minus[1] 648 through 1922

Crests of Tchijevsky's Index of Mass Human Excitability, Minus[1] 500 through 1922

and the Intervals between Spots

and the Most Nearly Associated Crests of the Index of Mass Human Excitability

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
1	-648		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12	-522		
13	-512		
14	-501		
15	-491	-489.5	+1.5
16	-481	-479.	+2.
17	-471	-470.	+1.
18	-461	-462.5	-1.5
19		-453.5	
20		-446.5	
21		-434	
		-423	
22		-410.5	
23		-403	
24	-393	-389.5	+3.5
25		-377	
26		-362	
27			
28	-349	-350.5	-1.5
29	-340	-339.5	+.5
30		-330.5	
31		-321	
32		-308	
33	-293	-298.	-5.
34	-283	-279.	+4.
35	-272	-273.	-1.
36	-261	-263.	-2.
37	-249	-252.5	-3.5
38	-236	-237.5	-1.5
39	-223	-228.5	-5.5
40	-214	-218.	-4.
41	-205	-208.5	-3.5
		-199.	

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
42	-192	-189.	+3.
43	-182	-184.	-2.
44	-172	-170.5	+1.5
45	-163		
		-155	
46	-149	-144	+5
47	-135	-133.5	+1.5
48	-125	-122.5	+2.5
49	-113	-111.5	+1.5
50	-104	-103.	+1
51	-91	-88.	+3
52	-82		
53	-72	-74.	-2
54	-62		
55	-53	-56	-3.
56	-42	-46	-4
		-32	
57	-27	-25	+2
58	-16	-13	+3
59	-5		
60	8	5.5	-2.5
61	20	16	-4
62	31		
63	42	42	0
64	53	58	+5
65	65	67	+2
66	76	79.5	+3.5
67	86		
68	96	91	-5
69	105	102	-3
70	118	115.5	-2.5
71	130	131	+1
72	141		
73	152	147	-5
74	163	162.5	-.5
75	175	173	-2.
76	186	184	-2.
77	196	198	+2
78	208	212.5	+4.5
79	219	222	+3
80	230	232	+2
81	240	242	+2
82	252	250	-2

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
83	265	261	-4
84	277	275	-2
85	290	285	-5
		295.5	
86	302	303	+1
87	311	312	+1
88	321	322	+1
89	330		
90	342	340	-2
91	354	357	+3
92	362		
93	372	374	+2
94	387	384	-3
95	396	395.5	-.5
		401.5	
96	410	409.5	-.5
97	421	420	-1
98	430	429.5	-.5
99	441		
100	452	450	-2
101	465	465.5	+.5
102	479	476	-3
103	490	487	-3
104	501	497	-4
105	511	508	-3
		515	
106	522		
107	531	531	0
108	542	540	-2
109	557	552	-5
110	567	567	0
111	578	575	-3
		581	
112	585		
113	597		
114	607	602	-5
115	618	617.5	-.5
116	628	623	-5
		635.5	
117	642	642	0
118	654	653	-1
119	665	669.5	+4.5
120	677		

1 See footnote to Table 1

Table 2 (Continued)

Schove's Dates of Sunspot Maxima, Minus[1] 648 through 1922

Crests of Tchijevsky's Index of Mass Human Excitability, Minus[1] 500 through 1922

and the Intervals between Spots

and the Most Nearly Associated Crests of the Index of Mass Human Excitability

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (−) or After (+) Spot Maxima
121	689	683.5	− 5.5
122	699	695.5	− 3.5
123	714	711	− 3
		718.5	
124	724		
125	735	730.5	− 4.5
126	745	739.5	− 5.5
127	754	754.5	+ .5
128	765		
129	776	773	− 3
130	787	787	0
131	798	800	+ 2
132	809	810	+ 1
133	821	823	+ 2
134	829	833	+ 4
135	840	845	+ 5
136	850	856	+ 6
137	862	865	+ 3
138	872	875.5	+ 3.5
139	887	885.5	− 1.5
140	898	900	+ 2
141	907	910	+ 3
142	917		
143	926	926.5	+ .5
144	938	939.5	+ 1.5
145	950	945.5	− 4.5
		958	
146	963	965	+ 2
147	974	975	+ 1
148	986	983	− 3
149	994		
150	1003	1001	− 2
151	1016	1012	− 4
152	1027	1026.5	− .5
153	1038	1037	− 1
154	1052	1048	− 4
		1057	
155	1067	1069.5	+ 2.5
156	1078	1077	− 1
157	1088		
158	1098	1093	− 5
159	1110	1104	− 6
160	1118	1115	− 3

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (−) or After (+) Spot Maxima
161	1129	1127.5	− 1.5
162	1138	1136	− 2
163	1151	1145	− 6
164	1160	1156.5	− 3.5
165	1173	1169.5	− 3.5
166	1185	1183	− 2
167	1193	1193	0
168	1202	1204	+ 2
169	1219	1212.5	− 6.5
170	1228	1225	− 3
		1235	
171	1239	1242	+ 3
172	1249		
173	1259	1255	− 4
		1265.5	
174	1276	1281	+ 5
175	1288		
176	1296	1293	− 3
177	1308	1304	− 4
178	1316	1312	− 4
179	1324	1327	+ 3
180	1337	1339.5	+ 2.5
181	1353	1351	− 2
182	1362	1359	− 3
183	1372	1370	− 2
184	1382	1382	0
185	1391	1391	0
186	1402	1400.5	− 1.5
187	1413	1411	− 2
		1420	
188	1429	1428.5	− .5
189	1439	1443	+ 4
190	1449	1453	+ 4
191	1461	1461	0
192	1472	1469.5	− 2.5
193	1480	1480.5	+ .5
194	1492	1490	− 2
195	1505	1501	− 4
		1511.5	
196	1519	1523	+ 4
197	1528		
		1535	
198	1539	1541	+ 2

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (−) or After (+) Spot Maxima
199	1548	1551	+ 3
200	1558.0	1562	+ 4
201	1572.0	1570.5	− 1.5
202	1581.0	1579.5	− 1.5
203	1591.0	1586	− 5.
204	1604.5	*1603.5	− 1
205	1615.5	1614.5	− 1
206	1626.0	1626	0
207	1639.5	1639	− .5
208	1649.0	1648.5	− .5
209	1660.0	1660.5	+ .5
210	1675.0	1673	− 2
211	1685.0	1685.5	+ .5
212	1693.9	1694	+ .1
213	1705.5	1705.5	0
214	1718.2	1717.5	− .7
215	1727.5	1728.5	+ 1.
216	1738.7	1738.5	− .2
217	1750.3	1749	− 1.3
218	1761.5	1760.5	− 1
219	1769.7	1770.5	+ .8
220	1778.4	1780.5	+ 2.1
221	1788.1	1790.5	+ 2.4
222	1805.2	1802.5	− 2.7
223	1816.4	1815.5	− .9
224	1829.9	1830.5	+ .6
225	1837.2	1839.5	+ 2.3
226	1848.1	1849.5	+ 1.4
227	1860.1	1862	+ 1.9
228	1870.6	1870.5	− .1
229	1883.9	1883.5	− .4
230	1894.1	1894	− .1
231	1907.0	1906	− 1
232	1917.6	1918.5	+ .9

*From year 1600 forward Schove dates his sunspot maxima to the nearest one-tenth year. Prior to 1600 Schove uses merely the year (with a .5 presumably understood). Tchijevsky uses merely the year (with a .5 presumably understood) throughout. To make the two series comparable, it has seemed simplest to add .5 to all of Tchijevsky's dates, starting with 1600. This has been done.

1 See footnote to Table 1

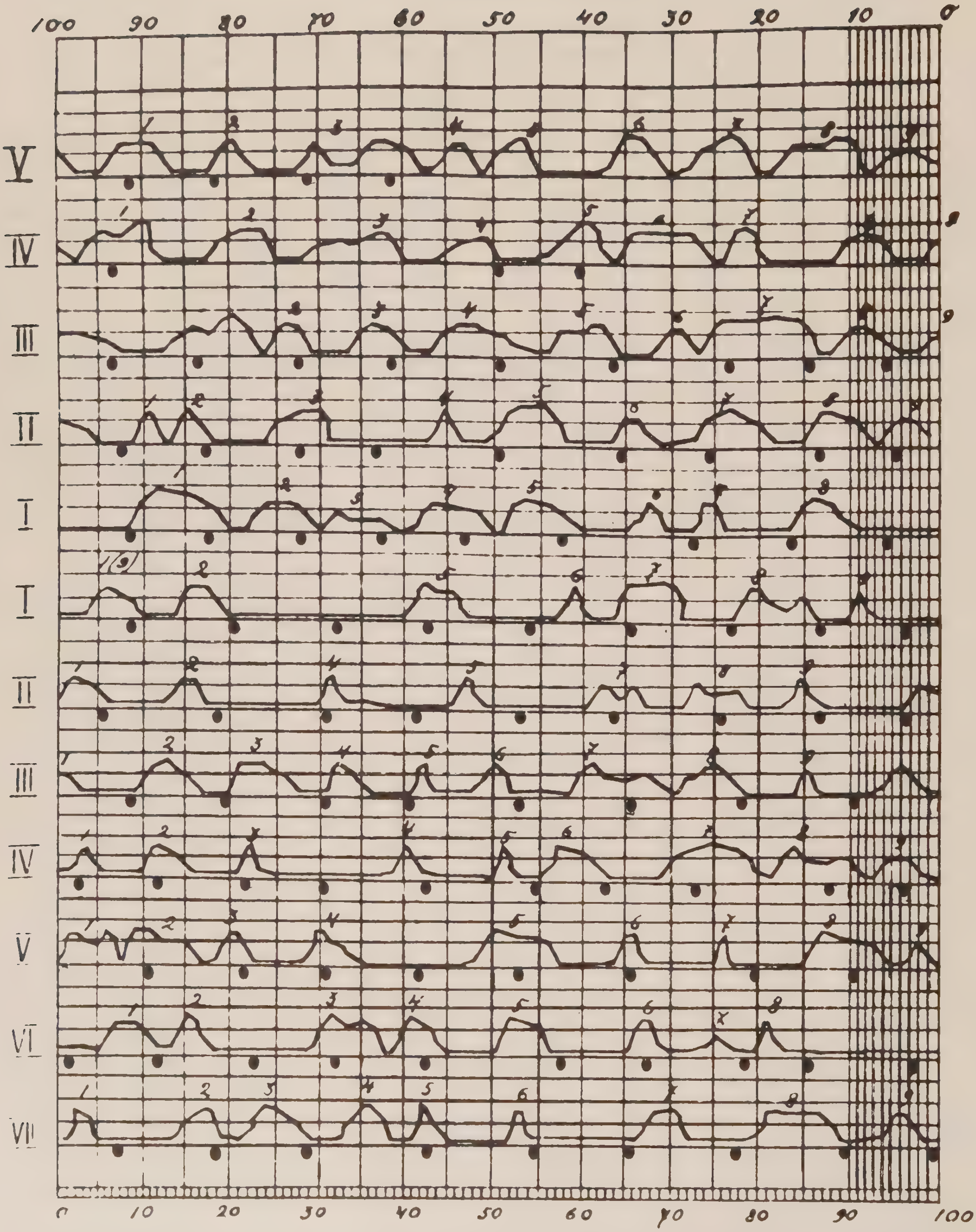

Fig. 3

Tchijevsky's Index of Mass Human Excitability, 500 B.C. — A.D. 1899 together with

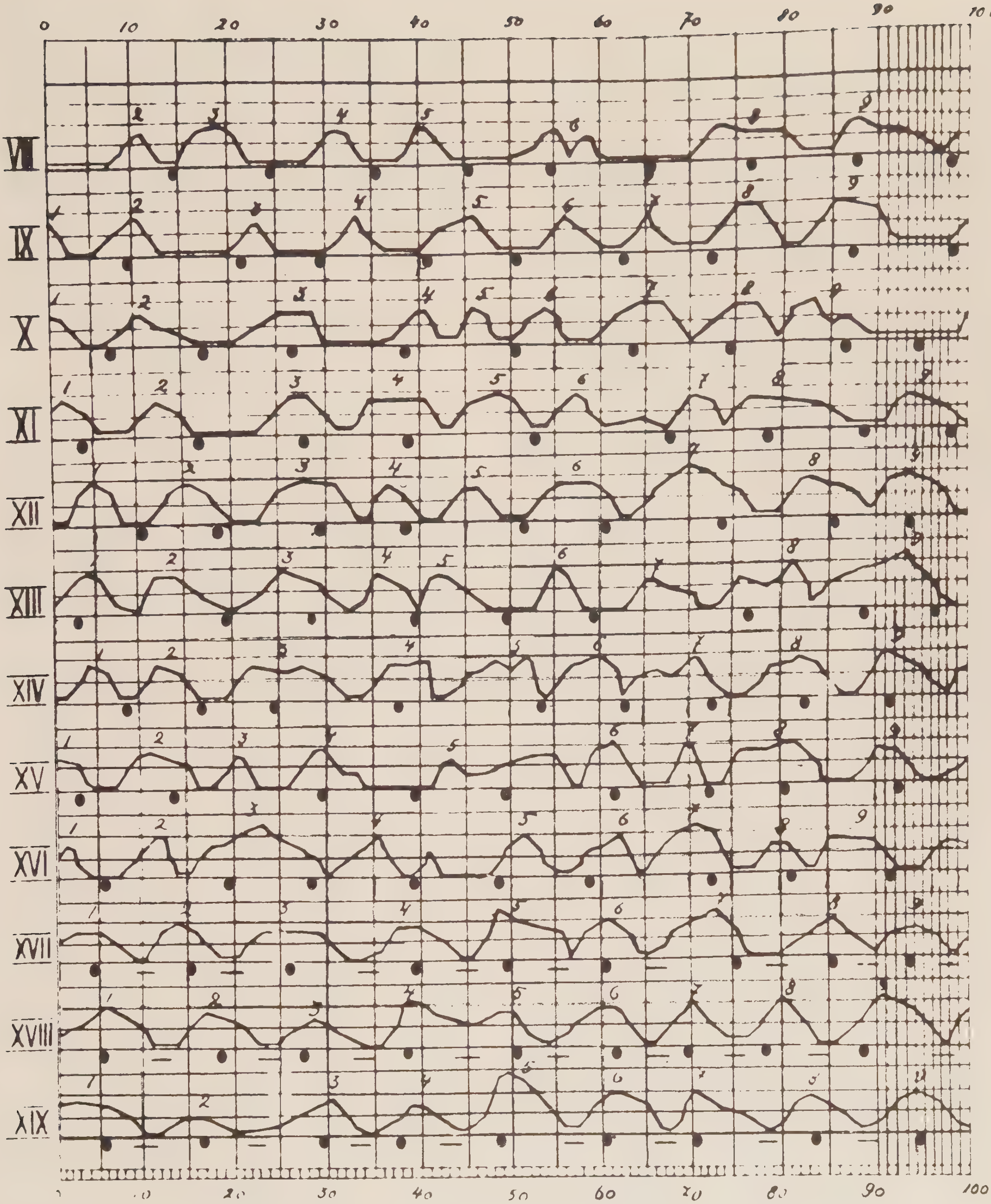

Fig. 3 (Continued)

dots to show sunspot maxima as established twenty years later by Schove (November, 1954).

sunspot maxima at scattered intervals between 500 B.C. and 300 B.C.; a continuous record of 200 maxima from 300 B.C. through 1922.

The seven sunspot maxima prior to 300 B.C. had corresponding mass human excitability crests.

From 300 B.C. through 1922 there were 200 sunspot maxima, 194 mass excitability crests. Obviously, there are six maxima for which no corresponding mass excitability crests exist. If we set some objective standards for comparison, such as that each crest be associated either forward or backward, with the nearest sunspot maximum, we find other instances where no comparison is possible. For instance consider the crest at year -199. There just is no maximum between -205 and -192 with which it can be compared. Consider the crest at -155. This crest might be thought to pair with the maximum at -163, but the distance to -163 is 8 years, to -149 only 6 years. The association would, therefore, be with the maximum at -149, if it were not for the fact that the crest at -144 is only 5 years away and must be used in preference. This leaves one maximum with no corresponding crest, one crest with no corresponding maximum, according to the standards we have set.

On this basis we find that there were 22 extra sunspot maxima for which there are no corresponding mass excitability crests; 16 extra mass excitability crests for which there are no corresponding sunspot maxima. There remain, therefore, from 300 B.C. to 1922, only 178 instances for which direct comparison is possible. If we add in the seven scattered instances prior to 300 B.C., we get a grand total population for study of 185.

The fourth column of Table 2 shows the number of years by which the mass human excitability crests are before (-) or after (+) the corresponding sunspot maxima.

In Table 2, mass human excitability crests are associated with the nearest sunspot maximum. As sunspot maxima are, on the average, about 11.1 years apart, every mass human excitability crest should come, *ideally*, within 5.55 years of a sunspot crest. If we have a random association, the mass human excitability crests will be distributed evenly between 5½ years before and 5½ years after the sunspot maxima. If the association is *not* random, the mass human excitability crests will be more numerous in the 2¾ years immediately before and in the 2¾ years immediately after the sunspot maxima than in the remaining 2¾ years in each direction. The actual distribution of the mass human excitability crest intervals is shown below in Table 3. This table shows the distribution of the intervals between the dates of the crests of the Tchijevsky index and the dates of the nearest sunspot maximum. A *minus* sign indicates the number of years by which the crest of the index falls *before* the nearest maximum, a *plus* sign indicates the number of years by which the crest of the index falls *after* the nearest maximum.

As can be read from the table, out of the 185 instances where comparison is possible, 112, or 60½%, of the index crests lie 2½ years

Table 3

Distribution of Intervals by which Crests of Tchijevsky's Index

Are Before (-) or After (+) the nearest Sunspot Maximum

500 B.C. — A.D. 1922

Number of years excitability crests are before (-), after (+) nearest sunspot maximum	Number of times found	Items grouped by distance from nearest maximum*	Items grouped by direction from nearest maximum	Total items
-6½	1			
-6	2			
-5½	3			
-5	9	47		
-4½	2			
-4	11			
-3½	5		99	
-3	14			
-2½	4			
-2	18			
-1½	9			
-1	10			
- ½	11	112		185
0	15		15	
+ ½	8			
+1	11			
+1½	6			
+2	15			
+2½	5			
+3	10		71	
+3½	3			
+4	6			
+4½	2	26		
+5	4			
+5½	0			
+6	1			

*The distance from the nearest maximum is split at 2 3/4 years before and after 0 (0 being an exact match).

or less, one way or the other from the nearest maximum; 73, or 39⅟₂%, lie beyond this distance. There is, therefore, a clear, even if not preponderant, tendency for the mass excitability crests to lie in the half of the cycle closest to the sunspots. They could not behave this way easily as a result of chance.

The fourth column shows the instances where the crests came before, coincident with, or after the corresponding sunspot maximum. The reason for this latter calculation will appear directly.

The correspondence between the sunspot *maxima* and the *crests* of the mass human excitability index from 1610 to 1899 (Fig. 1) is striking. Even more striking is the correspondence between the sunspot numbers and the mass human excitability *index*, 1749—1922 (Fig. 2). This correspondence needs no statistical confirmation. It is amazing. Perhaps a little too amazing. Let us, therefore, exclude the interval from 1610 forward and recompute the distribution of crests of the index, before and after maxima, as in Table 4.

Shortening the series reduces the number of instances of possible comparison from 185 to 157. From Table 4 we see that 84, or 53⅟₂%, lie 2½ years or closer; 73, or 46⅟₂%, lie more than 2½ years away. Thus we see that the concentration of the mass human excitability crests around sunspot maxima almost completely disappears.

It thus appears that practically all of the association between the mass human excitability crests and sunspot maxima lies in the period 1610 to 1922. Why was Tchijevsky led into thinking that this association continued backward? Did the dates of sunspot maxima prior to 1610, as known to Tchijevsky, fit his mass excitability crests more closely than do the dates as now provisionally established?

Let us remember that the dates of probable sunspot maxima have been changed importantly since Tchijevsky made his study. Table 5,

Table 4

Distribution of Intervals by which Crests of Tchijevsky's Index

Are Before (-) or After (+) the Nearest Sunspot Maximum

500 B.C. — A.D. 1610

Number of years excitability crests are before (-), after (+) nearest sunspot maximum	Number of times found	Items grouped by distance from nearest maximum*	Items grouped by direction from nearest maximum	Total items
-6½	1			
-6	2			
-5½	3			
-5	9	47		
-4½	2			
-4	11			
-3½	5		88	
-3	14			
-2½	3			
-2	17			
-1½	8			
-1	6			
- ½	7	84		157
0	9		9	
+ ½	5			
+1	8			
+1½	5			
+2	13			
+2½	3			
+3	10		60	
+3½	3			
+4	6			
+4½	2	26		
+5	4			
+5½	0			
+6	1			

*The distance from the nearest maximum is split at 2 3/4 years before and after 0 (0 being an exact match).

Table 5

Dates of Sunspot Maxima

Prior to 1610

as Determined from Data

Available to Tchijevsky in 1924

188	583	928	1158.5	1431
300	602	939.5	1185	1445
311	626	955	1192.5	1462.5
321	744.5	973	1202	1489.5
341	764.5	981	1239.5	1498.5
355	777	1004.5	1268	1516
371	786	1013.5	1276	1527.5
388.5	807	1038	1292.5	1537
398	832	1077	1306	1549.5
411	840	1095.5	1324.5	1562
449.5	848.5	1103	1352	1570.5
500	860.5	1117.5	1364.5	1584
536.5	872.5	1129.5	1372.5	1595.5
565.5	904.5	1137	1381.5	1604
577	917.5	1144.5	1402	

compiled from Fig. 1, shows the dates probably believed by Tchijevsky to be dates of sunspot maxima.

How did the crests of his mass human excitability index compare with the dates of sunspot maxima as known to him? The answer is shown in Table 6. When the comparison is made this way we find 71 instances where a comparison is possible. Of these 47, or 66%, of the crests are 2½ years or less from the corresponding sunspot maximum; 24, or 34⅓%, are over 2½ years away. It is now clear why Tchijevsky thought that the dramatic association of 1610 through 1922 continued backward.

Table 6

Distribution of Intervals by which Crests of Tchijevsky's Index

Are Before (-) or After (+) the Nearest Sunspot Maximum

500 B.C. — A.D. 1610

Limited to Sunspot Maxima Known to Tchijevsky and According to Timing as Knowable in 1924

Number of years excitability crests are before (-), after (+) nearest sunspot maximum	Number of times found	Items grouped by distance from nearest maximum*	Items grouped by direction from nearest maximum	Total items
-10				
- 5½	2			
- 5	1			
- 4½	5	15		
- 4	2			
- 3½	2		38	
- 3	2			
- 2½	5			
- 2	8			
- 1½	5			
- 1	4			
- ½	1			71
0	5	47	5	
+ ½	6			
+ 1	5			
+ 1½	2			
+ 2	5			
+ 2½	1			
+ 3	6		28	
+ 3½	0			
+ 4	0			
+ 4½	0	9		
+ 5	2			
+ 5½	1			

*The distance from the nearest maximum is split at 2 3/4 years before and after 0 (0 being an exact match).

Crests Precede Maxima

Let us now revert to a point touched upon earlier; namely the tendency of the crests of mass human excitability to precede the corresponding sunspot maximum. This tendency is present in all three of the tables showing the correspondence between these two phenomena. The percentage of crests of mass human excitability which *precede*, coincide with, or follow the corresponding sunspot maxima are given in Table 7 which follows. A tendency of industrial production similarly to precede sunspot numbers was noticed by Garcia-Mata and Shaffner as early as 1934 (Garcia-Mata and Shaffner, 1934). They explained this anomoly by the assumption that it was the *rate of change* of sunspot numbers, rather than the actaal number of spots, that was the associated phenomena.

Table 7

Percentage of Crests of Mass Human Excitability That Lead, or Coincide, or Follow Sunspot Maxima

	Percent of Crests: Lead	Coincide	Follow
All crests, through 1922	53½	8	38½
All crests, through 1610	56	5½	38½
Crests where Tchijevsky had data, using his dates instead of Schoves'	53	7	38½

More recently, Wing has advanced the theory of latitudinal passage. (Wing, 1954, 1955, 1956, 1957, 1958, 1959.) This theory postulates that crests of cycles fall later and later in a butterfly pattern as they are found closer and closer from either pole toward the equator. The time required for the passage from pole to equator has been found to equal the square root of one-half of the wave length of the cycle, squared. [About 7/10 of the period (wave length) of the cycle.] According to this theory, which has been confirmed insofar as it has been investigated, an 11.1-year cycle which crested at the pole at a given year would slip 11.1 x .7 or 7.77 years in moving the 90° toward the equator. This amounts to .0863 years for each single degree.

As the locus of the countries included in

Tchijevsky's index approximates 38° North or South latitude, and as the locus of sunspots approximates 20° North and South latitude, it is clear that, according to the theory of latitudinal passage, if we had an 11.1-year cyclic force passing *simultaneously* over the face of the sun and over the face of the earth, it would crest on the earth at 38° North and South latitude about 1½ years *before* it crested on the sun at 20° North and South latitude. This is because a difference at 18° at .0863 years per degree equals 1.55 years.

Let us now adjust the sunspot maxima prior to 1610 for latitudinal passage by moving their timing back by 1 year, 2 years, and 3 years, respectively as in Table 8. Column 1 shows the unadjusted distribution taken from Table 4. We find 84 crests in the -2½ to +2½ zone. Moving the maxima back by 1 year as in Column 2, increases the concentration to 87. Moving them back by 2 years, as in Column 3, we get the same value, 87. Moving them back by 3 years, as in Column 4, we find only 85 of the crests in the -2½ to +2½-year zone. The concentration of crests around sunspot maxima is thus seen to be closest when the maxima are retarded between 1 and 2 years—let us say when moved back 1½ years. This result is in conformity with the theory of latitudinal passage.

This method of adjustment is not quite

Table 8

Distribution of Intervals by which Crests of Tchijevsky's Index Are Before (-) or After (+) the Nearest Sunspot Maximum

500 B.C. — A.D. 1610

Grouped to Show Concentration Around Actual Maxima and Maxima Set Back by 1, 2, and 3 Years to Adjust for Possible Latitudinal Passage

Number of years excitability crests are before (-), after (+) sunspot maxima	Number of times found	Items grouped by distance from the nearest maximum: (more than 2 years; less than 2 years)	set back by 1 year	set back by 2 years	set back by 3 years
-6½	1	47	28	15	3
-6	2				
-5½	3				85
-5	9				
-4½	2			87	
-4	11				
-3½	5		87		
-3	14				
-2½	3				
-2	17	84			
-1½	8				
-1	6				
- ½	7				
0	9				69
+ ½	5				
+1	8			55	
+1½	5				
+2	13		42		
+2½	3				
+3	10	26			
+3½	3				
+4	6				
+4½	2				
+5	4				
+5½	0				
+6	1				

Table 9

The Intervals of Dates Between Sunspot Maxima

and

Most Nearly Associated Crests in Tchijevsky's Index

with

Dates of Sunspot Maxima Moved Back 1½ Years

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
1	-649.5		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12	-523.5		
13	-513.5		
14	-502.5		
15	-492.5	-489.5	+3
16	-482.5	-479	+3.5
17	-472.5	-470	+2.5
18	-462.5	-462.5	0
19			
20			
21			
22			
23			
24	-394.5	-389.5	+5
25			
26			
27			
28	-350.5	-350.5	0
29	-341.5	-339.5	+2
30			
31			
32			
33	-294.5	-298	-3.5
34	-284.5	-279	+5.5
35	-273.5	-273	+ .5
36	-262.5	-263	- .5
37	-250.5	-252.5	-2
38	-237.5	-237.5	0
39	-224.5	-228.5	-4
40	-215.5	-218	-2.5
41	-206.5	-208.5	-2
		-199	

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
42	-193.5	-189	+4.5
43	-183.5	-184	- .5
44	-173.5	-170.5	+3
45	-164.5		
46	-150.5	-155	-4.5
		-144	
47	-136.5	-133.5	+3
48	-126.5	-122.5	+4
49	-114.5	-111.5	+3
50	-105.5	-103	+2.5
51	- 92.5	- 88	+4.5
52	- 83.5		
53	- 73.5	- 74	- .5
54	- 63.5		
55	- 54.5	- 56	-1.5
56	- 43.5	- 46	-2.5
		- 32	
57	- 28.5	- 25	+3.5
58	- 17.5	- 13	+4.5
59	- 6.5		
60	(6.5	5.5	-1
61	18.5	16	-2.5
62	29.5		
63	40.5	42	+1.5
64	51.5		
		58	
65	63.5	67	+4.5
66	74.5	79.5	+5
67	84.5		
68	94.5	91	-3.5
69	103.5	102	-1.5
70	116.5	115.5	-1
71	128.5	131	+2.5
72	139.5		
73	150.5	147	-3.5
74	161.5	162.5	+1
75	173.5	173	- .5
76	184.5	184	- .5
77	194.5	198	+3.5
78	206.5		
79	217.5	212.5	-5
		222	

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
80	228.5	232	+3.5
81	238.5	242	+3.5
82	250.5	250	- .5
83	263.5	261	-2.5
84	275.5	275	- .5
85	288.5	285	-3.5
		295.5	
86	300.5	303	+2.5
87	309.5	312	+2.5
88	319.5	322	+2.5
89	328.5		
90	340.5	340	- .5
91	352.5		
92	360.5	357	-3.5
93	370.5	374	+3.5
94	385.5	384	-1.5
95	394.5	395.5	+1
		401.5	
96	408.5	409.5	+1
97	419.5	420	+ .5
98	428.5	429.5	+1
99	439.5		
100	450.5	450	- .5
101	463.5	465.5	+2
102	477.5	476	-1.5
103	488.5	487	-1.5
104	499.5	497	-2.5
105	509.5	508	-1.5
106	520.5	515	-5.5
107	529.5	531	+1.5
108	540.5	540	- .5
109	555.5	552	-3.5
110	565.5	567	+1.5
111	576.5	575	-1.5
112	583.5	581	-2.5
113	595.5		
114	(605.5)	602	-3.5
115	616.5	617.5	+1
116	626.5	623	-3.5
		635.5	
117	640.5	642	+1.5
118	652.5	653	+ .5

Table 9 (Continued)

The Intervals of Dates Between Sunspot Maxima

and

Most Nearly Associated Crests in Tchijevsky's Index

with

Dates of Sunspot Maxima Moved Back 1½ Years

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
119	663.5	669.5	+6
120	675.5		
121	687.5	683.5	-4
122	697.5	695.5	-2
123	712.5	711	-1.5
124	722.5	718.5	-4
125	733.5	730.5	-3
126	743.5	739.5	-4
127	752.5	754.5	+2
128	763.5		
129	774.5	773	-1.5
130	785.5	787	+1.5
131	796.5	800	+3.5
132	807.5	810	+2.5
133	819.5	823	+3.5
134	827.5	833	+5.5
135	838.5		
136	848.5	845	-3.5
137	860.5	856	-4.5
		865	
138	870.5	875.5	+5
139	885.5	885.5	0
140	896.5	900	+3.5
141	905.5	910	+4.5
142	915.5		
143	924.5	926.5	+2
144	936.5	939.5	+3
145	948.5	945.5	-3
		958	
146	961.5	965	+3.5
147	972.5	975	+2.5
148	984.5	983	-1.5
149	992.5		
150	1001.5	1001	- .5
151	1014.5	1012	-2.5
152	1025.5	1026.5	+1
153	1036.5	1037	+ .5
154	1050.5	1048	-2.5
		1057	
155	1065.5	1069.5	+4
156	1076.5	1077	+ .5
157	1086.5		

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
158	1096.5	1093	-3.5
159	1108.5	1104	-4.5
160	1116.5	1115	-1.5
161	1127.5	1127.5	0
162	1136.5	1136	- .5
163	1149.5	1145	-4.5
164	1158.5	1156.5	-2
165	1171.5	1169.5	-2
166	1183.5	1183	- .5
167	1191.5	1193	+1.5
168	1200.5	1204	+3.5
169	1217.5	1212.5	-5
170	1226.5	1225	-1.5
171	1237.5	1235	-2.5
172	1247.5	1242	-5.5
173	1257.5	1255	-2.5
		1265.5	
174	1274.5		
175	1286.5	1281	-5.5
176	1294.5	1293	-1.5
177	1306.5	1304	-2.5
178	1314.5	1312	-2.5
179	1322.5	1327	+4.5
180	1335.5	1339.5	+4
181	1351.5	1351	- .5
182	1360.5	1359	-1.5
183	1370.5	1370	- .5
184	1380.5	1382	+1.5
185	1389.5	1391	+1.5
186	1400.5	1400.5	0
187	1411.5	1411	- .5
		1420	
188	1427.5	1428.5	+1
189	1437.5		
190	1447.5	1443	-4.5
		1453	
191	1459.5	1461	+1.5
192	1470.5	1469.5	-1
193	1478.5	1480.5	+2
194	1490.5	1490	- .5
195	1503.5	1501	-2.5
196	1517.5	1511.5	-6

Cycle Number	Dates of Sunspot Maxima	Dates of Mass Human Excitement Crests	Years by Which Crests Are Before (-) or After (+) Spot Maxima
197	1526.5	1523	-3.5
198	1537.5	1535	-2.5
		1541	
199	1546.5	1551	+4.5
200	1556.5	1562	+5.5
201	1570.5	1570.5	0
202	1579.5	1579.5	0
203	1589.5	1586	-3.5
204	1603*	1603.5	+ .5
205	1614	1614.5	+ .5
206	1624.5	1626	+1.5
207	1638	1639	+1
208	1647.5	1648.5	+1
209	1658.5	1660.5	+2
210	1673.5	1673	- .5
211	1683.5	1685.5	+2
212	1692.4	1694	+1.6
213	1704	1705.5	+1.5
214	1716.7	1717.5	+ .8
215	1726	1728.5	+2.5
216	1737.2	1738.5	+1.3
217	1748.8	1749	+ .2
218	1760	1760.5	+ .5
219	1768.2	1770.5	+2.3
220	1776.9	1780.5	+3.6
221	1786.6	1790.5	+3.9
222	1803.7	1802.5	-1.2
223	1814.9	1815.5	+ .6
224	1828.4	1830.5	+2.1
225	1835.7	1839.5	+3.8
226	1846.6	1849.5	+2.9
227	1858.6	1862	+3.4
228	1869.1	1870.5	+1.4
229	1882.4	1883.5	+1.1
230	1892.6	1894	+1.4
231	1905.5	1906	+ .5
232	1916.1	1918.5	+2.4

*See footnote to Table 2

accurate because, in the process of moving all sunspot maxima backward, some few mass human excitability crests come closer to a different sunspot maximum, or find themselves with no maximum at all with which to be associated. However, the method is accurate enough for our present purposes.

Let us now adjust all the Schove sunspot maxima dates to a 38° latitude basis by moving them back by 1½ years as suggested by Table 8, thus showing them at the time at which, according to the theory of latitudinal passage, they would have occurred if they had manifested themselves on the sun at the higher latitude. The results are shown in Table 9.

We now figure the distribution of the mass human excitability crests falling before 1610 from Schove's sunspot maxima, adjusted to a 38° basis. The results are shown in Table 10. We find that there are 158 instances

Table 10

Distribution of Intervals by which Crests of Tchijevsky's Index

Are Before (-) or After (+) the Nearest Sunspot Maximum Adjusted to 38° N and S Latitude

500 B.C. — A.D. 1610

Number of years excitability crests are before (-), after (+) nearest sunspot maximum	Number of times found	Items grouped by distance from nearest maximum*	Items grouped by direction from nearest maximum	Total items
-6	1			
-5½	3			
-5	2			
-4½	5	29		
-4	4			
-3½	12			
-3	2		82	
-2½	14			
-2	5			
-1½	14			
-1	3			
- ½	17	96		
0	8		8	158
+ ½	6			
+1	7			
+1½	9			
+2	5			
+2½	8			
+3	5		68	
+3½	11			
+4	3			
+4½	7	33		
+5	3			
+5½	3			
+6	1			

*The distance from the nearest maximum is split at 2 3/4 years before and after 0 (0 being an exact match).

Table 11

Distribution of Intervals by which Crests of Tchijevsky's Index

Are Before (-) or After (+) the Nearest Sunspot Maximum Adjusted to 38° N and S Latitude

500 B.C. — A.D. 1922

Number of years excitability crests are before (-), after (+) nearest sunspot maximum	Number of times found	Items grouped by distance from nearest maximum*	Items grouped by direction from nearest maximum	Total items
-6	1			
-5½	3			
-5	2			
-4½	5	29		
-4	4			
-3½	12		84	
-3	2			
-2½	14			
-2	5			
-1½	14			
-1	4			
- ½	18			
0	9	119	9	186
+ ½	10			
+1	11			
+1½	15			
+2	8			
+2½	11			
+3	6			
+3½	13		93	
+4	5			
+4½	7	38		
+5	3			
+5½	3			
+6	1			

*The distance from the nearest maximum is split at 2 3/4 years before and after 0 (0 being an exact match).

where comparison is possible. Of these, 96, or 61%, of the mass human excitability crests lie 2½ years or less from the corresponding sunspot maximum; only 64, or 39%, lie three years or more away. Such heavy concentration, between 2¾ years before and after maxima, could scarcely come about by chance alone, and we are justified in assuming that, in the figures prior to 1610, there may be association of statistical validity between the times of the crests of the Tchijevsky Index of Mass Human Excitability and Schove's dates of sunspot maxima set back 1½ years.

To conclude this part of the study, let us now construct a table to show the distribution over the entire period of time, 500 B.C. to—A.D. 1922. This has been done with the results shown in Table 11. As one would expect, the comparison is even better.

Correspondence of Sunspot Maxima and the Index of Mass Human Excitability

In the analysis in which we have engaged so far, we have compared dates of sunspot maxima with dates of the *crests* of the Index of Mass Human Excitability.

The use of the *crest* is subject to a certain amount of criticism. For one thing, it is unreasonable to suppose that Tchijevsky, or anyone else, could pinpoint a particular year, one or two thousand years ago, as *the* year of maximum world-wide excitability, as against, let us say, a year one or two years earlier or later. On the other hand, a *period* of mass excitability might not be too hard to approximate. Secondly, the results that are obtained will depend, at least to a slight extent, upon the method of picking crests. If done subjectively, it is open to the criticism of bias. If done according to some rule, it may not always be realistic. And thirdly, how shall we weigh those instances where crests and maxima fail to correspond at all?

Therefore, it may be illuminating to use *all* the figures of the index, arranging them in the form of a variable length periodic table based on the dates of sunspot maxima. In such a table we enter into a column, say Column 4, all the mass human excitability index values that come in years of sunspot maxima. Then, into Column 3 we enter all the values that come one year before years of sunspot maxima; into Column 5 we enter the values that come one year after the years of sunspot maxima. And so on. These columns are then averaged with the result shown below in Table 12 and Fig. 4. Using all values up to 1610 (plus 2 more years to come to a proper breaking point), we find that the mass human excitability index crests two years ahead of the years of sunspot maxima. For the period 1612 to 1922, where Tchijevsky had actual sunspot data, his index coincides almost exactly with the sunspot performance. Over the entire period, the average wave crests one year ahead of sunspot maxima.

Table 12

Tchijevsky's Index Arranged in a Periodic Table

With Varying Length to Match Sunspot Maxima

Position in Table	Percentages by Groups of Cycles									Summary Entire Table	
	-494 to -297	-296 to -20	-19 to 261	262 to 538	539 to 817	818 to 1094	1095 to 1368	1369 to 1611	1612 to 1922	-494 to 1611	-494 to 1922
1	67.5	102.4	85.9	110.5	119.6	96.2	130.1	115.3	79.1	108.2	103.3
2	104.5	107.7	99.3	109.2	95.5	91.1	124.4	129.3	111.9	109.3	109.7
3	124.8	115.0	90.4	123.7	99.1	87.1	108.9	124.3	142.4	108.2	113.9
4	128.1	109.8	83.0	134.2	102.7	93.2	80.5	121.4	161.8	103.7	113.3
5	151.7	108.7	108.1	123.7	87.0	112.4	76.4	102.4	153.7	103.2	111.5
6	144.8	99.2	118.5	96.1	79.8	126.6	74.8	84.5	133.4	97.9	103.6
7	107.8	95.0	117.0	88.2	89.4	122.5	70.7	78.6	100.6	93.4	94.6
8	70.8	85.5	115.6	81.6	100.3	104.3	81.3	79.7	67.9	90.4	86.7
9	43.9	87.6	117.0	76.3	110.0	92.2	104.9	75.7	47.8	92.0	84.6
10	63.9	90.8	88.9	76.3	110.0	87.1	122.8	82.5	47.6	94.1	86.6
11	91.0	98.2	74.1	81.6	106.3	88.1	125.2	105.5	53.9	99.2	91.8

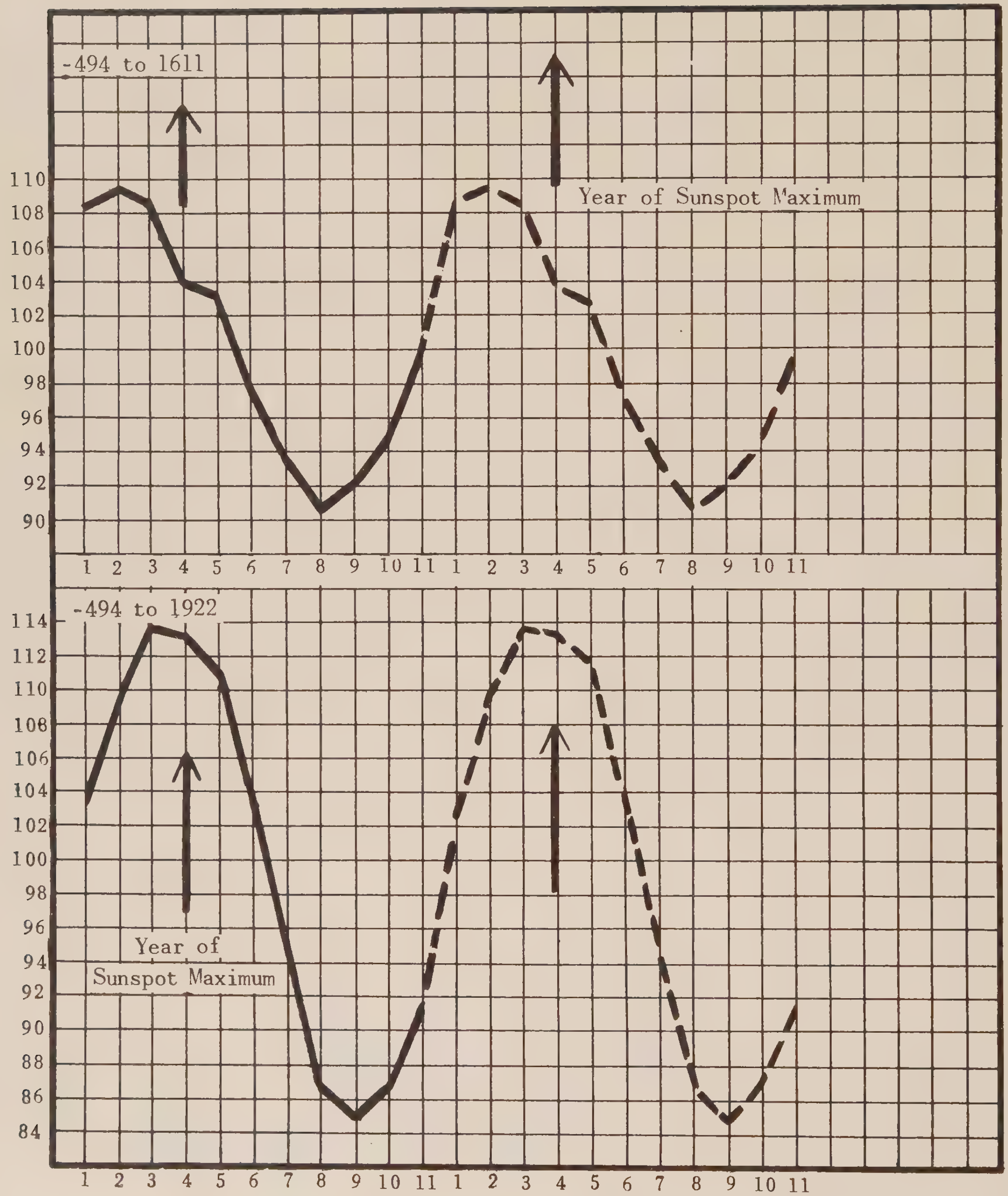

Fig. 4

Summary of Entire Periodic Table of Tchijevsky's Index

Arranged with Length Varying to Match Sunspot Maxima

Discussion

The crux of this inquiry is: are sunspots associated with mass human excitability? More precisely: are sunspot maxima, as determined by Schove, associated with mass human excitability, as determined by Tchijevsky?

A corollary of this inquiry is: if there is an association, are emanations from the spots the *cause* of the mass human excitability, as believed by Tchijevsky?

Addressing ourselves to the first question, we find:

1. There is a tendency, for as far back as records are consecutively available (300 B.C.), for there to be nine sunspot maxima per century.

2. There is a tendency, from 500 B.C. to A.D. 1922, for Tchijevsky's index of mass human excitability to evidence nine waves per century. This is so whether waves are counted by Tchijevsky or by an objective method suggested by the writer.

3. From 1610 to date, for which period of time Tchijevsky had actual telescopic information relative to sunspots, peaks of his index conform closely to dates of sunspot maxima. From 1749 to 1922, for which period of time Tchijevsky had actual numerical sunspot numbers, the correspondence is dramatic.

4. Using modern dates of sunspot maxima *prior* to 1610, the tendency of mass human excitability crests to group closely around dates of sunspot maxima is little better than would result from chance.

5. As one looks more deeply into the matter, however, one finds that if one sets back the dates of the sunspot maxima by a year and a half to conform to the theory of latitudinal passage, there is indeed a marked tendency for the crests of the index of mass human excitability to concentrate around the adjusted sunspot maxima dates. This tendency is based on those instances where comparison is possible.

It should be noted however that, because of extra sunspot maxima between crests of the mass excitability index, or because of extra crests of mass excitability between sunspot maxima, there is no comparison possible in nearly a quarter of the instances.

6. When one compares *all* values of the Index of Mass Human Excitability prior to 1612 (not merely crests) with *all* sunspot maxima prior to this date, one finds that, *on the average*, the mass human excitability index does show a corresponding wave of intensity, and that this wave, like the crests taken separately, does crest *ahead* of the sunspot maxima.

Four things should be noticed in regard to this comparison:

(a) The *shape* of the average mass human excitability wave, as determined by a variable length periodic table dated according to sunspot maxima, corresponds to the typical *shape* of the average sunspot maxima.

(b) The *strength* of the average wave in the mass human excitability index prior to 1612 is relatively weak. It ranges only from 3.40 to 4.11, in contrast to a possible range of 0 to 8, if the correspondence were perfect. Even so, the average wave has a peak that is 109.3% of its own average, a trough that is 90.4% of its own average, and an over-all move from trough to crest of 21% of trough. If we include the values through 1922, as for this purpose we probably should, we obtain a range of 3.30 to 4.44. The percentages become 113.9% at crest, 84.6% at trough, and an over-all move from trough to crest of 35% of trough.

(c) Further study of all the values of the mass human excitability index prior to 1612, in relation to all sunspot maxima prior to that date, shows that although, *on the average*, the index values crest ahead of the corresponding sunspot maxima, this tendency is not universal throughout the series. In fact, when the periodic table is averaged in sections, the mass human excitability index tends to slide from left to right across the table as they would do if they were being influenced concurrently by a somewhat stronger cycle slightly longer (perhaps 11.15 years long) than the average sunspot cycle of 11.1 years.

(d) The series of figures is long enough so that an average of all the mass human excitability waves will almost completely eliminate the distorting effect of any concurrent cycle slightly longer than the sunspot cycle, if such a cycle should be present. Therefore, we need not fear that what we see in an average cycle of mass human excitability that is of sunspot cycle length is an artifact created by forcing a longer cycle into the sunspot mold.

Taking all facts into account, it seems to the writer that there probably is some response on the part of human beings to the sunspot cycle. However, this response would seem to be to the *cycle*, not to the spots themselves, for the maximum of mass human excitability *precedes* the maximum number of spots.

If there is a concurrent cyclic force, unrelated to sunspots, slightly longer than the sunspot cycle, we have at least a partial explanation of why the correspondence between mass human excitability and sunspot maxima and sunspot numbers was so good in the 1612—1922 interval, and also, why the mass human excitability index failed to precede the sunspot

figures as it had in the earlier years. Also, if there is a cyclic force of this sort, and if it continues, we may expect the mass human excitability waves eventually to *follow* the sunspot maxima. In the course of several hundred years, there should cease to be any association whatever. Then, several hundred years still later the association should become evident again.

Turning now to the corollary mentioned at the beginning of this section, if there is an association between sunspots and mass human excitability, are emanations from the spots the cause of the excitability, as believed by Tchijevsky?

In view of the tendency of the mass excitability index to precede the spots, it is clear that emanations from the spots cannot be the *cause* of the excitability.

What then could be the explanation? On a purely conjectural basis, four ideas may be advanced: (1) We can imagine (with Garcia-Mata and Shaffner) that the *increasing* number of sunspots (in contrast to a maximum *number* of sunspots) in some way has a terrestrial effect. (2) It is known that sunspots appear in the middle latitudes and are then found nearer and nearer to the equator as the cycle progresses. One might conjecture that there are solar disturbances in the higher latitudes that precede the visible spots, and that these disturbances have a corresponding terrestrial effect. (3) We might imagine environmental forces affecting both the earth and the sun, only in both instances affecting 38° North and South latitude (at the locus of the countries involved in mass human excitability index) about 1½ years before affecting (in both instances) 20° North and South latitude (the locus of the sunspots). That is to say, we can think of the association as two results of a common cause. (4) We can ascribe the whole behavior (a) of sunspots, (b) of human excitability, and (c) of their association, merely to chance.

My own prejudices favor the third conjecture.

Conclusion

There probably is some association between sunspot behavior and mass human excitability.

This association is probably not the result of chance.

The cause of the association is unknown.

REFERENCES

ANDERSON, C. N. 1939. "A Representation of the Sunspot Cycle." *Bell System Technical Journal*. Vol. XVIII, pp. 292-299. Reprinted as *Foundation Reprint No. 19*. 8 pp. 1947

DEWEY, EDWARD R. 1958. "The Length of the Sunspot Cycle." *Journal of Cycle Research*. Vol. 7, No. 3, pp. 79-91.

GARCIA-MATA, CARLOS, and SHAFFNER, FELIX. 1934. "Solar and Economic Relationships." *The Quarterly Journal of Economics*. Vol. XLIX, pp. 1-51. Reprinted as *Foundation Reprint No. 10*. 51 pp. 1945.

SCHOVE, D. JUSTIN. 1953. "The Sunspot Cycle, A.D. 301—1950." *Journal of Cycle Research*. Vol. 2, No. 4, pp. 90-93.

__________ 1956. "Sunspot Maxima Since 649 B.C." *Journal* of the British Astronomical Association. Vol. 66, No. 2, pp. 59-61. Reprinted in *Journal of Cycle Research*. Vol. 5, No. 4, pp. 110-111. October, 1956.

TCHIJEVSKY, A. L. 1924. "Physical Factors of the Historical Process." Translated by Vladimir P. de Smitt and presented at the Annual Meeting of the American Meteorological Society. Philadelphia, Pa. December 30, 1926. *Journal of Cycle Research*. Vol. 5, No. 4, pp. 89-109. October, 1956.

WING, LEONARD W. 1954. "Global Pattern of 4.222-Year Cycle in Temperature." *Journal of Cycle Research*. Vol. 3, No. 3, pp. 55-83.

__________ 1955. "Latitudinal Slippage of Bob-White, Hairy Woodpeckers, and Downy Woodpecker Cycles." *Journal of Cycle Research*. Vol. 4, No. 1, pp. 3-31.

__________ 1956. "Ultra-Long Waves and Global Patterns of Temperatures." *Journal of Cycle Research*. Vol. 5, No. 2, pp. 31-59.

__________ 1957. "Ultra-Long Waves and Solar-Terrestrial Cycle Relationships." *Journal of Cycle Research*. Vol. 6, No. 3 & 4, pp. 55-119.

__________ 1958. "Latitudinal Passage Behavior." *Journal of Cycle Research*. Vol. 7, No. 3, pp. 67-78.

__________ 1959. "Solar-Terrestrial Relations Indicating Possible Cosmic Waves." *Journal of Cycle Research*. Vol. 8, No. 3, pp. 67-95.

TCHIJEVSKY'S INDEX OF MASS HUMAN EXCITABILITY 500 B.C. – A.D. 1922

by S. L. Horner

As a supplement to his paper "Physical Factors of the Historical Process," Tchijevsky printed charts showing the "mean curves of the universal historical process on all the surface of the earth" from 500 B.C. to A.D. 1922.[1] As stated variously in Vladimir de Smitt's translation and condensation of Tchijevsky's paper, the height of the curves show, "the quantity of important historical events;. . .the number of historical events."[2,3]

Tchijevsky's charts have been enlarged and the year-by-year values read off. These values are printed below.

De Smitt explains, in constructing this Index "the most difficult thing for the author was to adopt a uniform unit for measuring the statistics of the activities of human masses. Here were to be considered two factors; quality of the event (its importance) and quantity (number) of human masses participating.

"Other factors such as the length of the event, the area occupied by it, etc., handicapped the formation of the unit.

"It was necessary to find out a generalizing method; i.e., such a method as would be applicable for recording any historical event. For this purpose, Professor Tchijevsky adopted the following moments of every mass event which had a more or less important historical value.

"(1) The beginning of the event; i.e., the first rising of masses, and

"(2) The moment of the highest tension (if such a moment can be strictly defined).

"Greatest attention was paid to the dates of the starting of historical events; i.e., the dates of the first risings of human masses for attaining a certain cause.

"The final deductions were arrived at after a long study of detailed statistical researches in the histories of 72 countries and nations of the world; these histories having been known to science from 500 B.C. to 1914, in other words, for 2414 years. The countries and nations involved in this study were: (See table in next column.)

"For the purpose of studying the histories of these peoples, countries and states, all works and text books (available under present conditions) in modern and ancient languages were consulted."[4]

Periods of mass human activity are characterized by "Psychometric pandemics; revolutions, insurrections, expeditions, migrations, etc.,"[5] "Military and political enthusiasm,"[4] "the dissemination of different doctrines (political, religious, etc.), the spreading of heresies, religious riots, pilgrimages, etc.,. . the appearance of social, military, and religious leaders, reformers, etc., . . .(and). . .the formation of political, military, religious and commercial corporations, associations, unions, leagues, sects, companies, etc."[6]

Tchijevsky believed that about nine such periods occurred during each century and that they were associated with sunspot maxima.[7]

IN EUROPE

Greece	Switzerland	Spain	Denmark
Rome	Hungary	Ireland	Poland
Italy	Austro-Hungary	Scotland	Bulgaria
Germany	Turkey	Holland	Serbia
Gaul	Rumania	Netherland	Czechia
France	Russia	Norway	etc.
Iberia	Lithuania	Sweden	

IN ASIA

China	Asiatic Russia	Ceylon
Tibet	Afghanistan	East-Roman Empire
Mongolia	Arabia	Turkey
Japan	Central Asia	Persia
Korea	Hunns	Palestine-Israel
Indonesia	India	and other ancient
Siberia	Indo-China	people

IN AFRICA

Egypt	Congo	Morocco
Carthage	Sudan	Other African people
Mauritania	Abyssinia	European Colonies, etc.

IN AMERICA

Canada	Brazil	Peru
United States	Texas	European Colonies
California	Mexico	etc.

IN AUSTRALIA

European Colonies	Oceania	Tasmania

References

1. Vladimir P. de Smitt, "Physical Factors of the Historical Process by Professor A. L. Tchijevsky, Assistant Astonomical Observatory; Collaborator, Institute of Biological Physics; Fellow, Archeological Institute, Moscow. Translated and Condensed." A paper read at the Annual Meeting of the American Meteorological Society, Philadelphia, Pennsylvania, December 30, 1926, and published in the *Journal of Cycle Research,* Vol. 5, No. 4, October, 1956, pp. 89-109. Reprinted in *Cycles,* Vol. VIII, No. 2, February, 1957, pp. 29-52, as *Foundation Reprint, No. 39.* The charts referred to were printed on pages 106-107 of the *Journal of Cycle Research* paper; pp. 48-49 of the *Cycles* reprint.

2. *Ibid.*, p. 107
3. *Ibid.*, p. 96
4. *Ibid.*, pp. 94-95
5. *Ibid.*, p. 95
6. *Ibid.*, p. 96
7. *Ibid.*, pp. 92-96

* Zero Year is the Year 1 B.C.

Years Before Base Year (-)	Base Years (Prior to A.D.)					Years After Base Year	Base Years A.D.																			
	-400	-300	-200	-100	*0		*0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900
0	2	4	4	2	1	0	*	3	4	2	2	2	1	2	7	7	7	1	3	1	7	6	6	3	7	1
1	3	1	2	3	1	1	1	6	4	3	7	2	2	2	5	5	9	1	5	1	7	8	6	4	8	1
2	4	1	1	5	1	2	1	7	1	6	7	2	8	2	1	3	7	1	6	2	6	7	7	5	8	2
3	5	1	1	6	1	3	1	6	1	7	5	2	7	2	0	2	6	7	8	5	5	2	7	6	8	5
4	4	1	2	5	1	4	5	5	1	4	4	2	6	2	0	0	5	10	9	9	1	0	7	7	7	6
5	3	4	3	3	1	5	7	3	1	2	5	3	1	2	0	0	2	9	8	8	0	0	6	10	7	7
6	2	6	4	0	1	6	7	2	1	1	7	4	1	2	2	1	2	8	6	7	0	0	5	9	6	7
7	0	7	5	2	1	7	6	2	1	1	1	6	1	2	5	2	2	5	3	3	0	0	4	8	5	6
8	1	8	6	4	1	8	5	2	1	1	5	6	1	3	6	4	2	0	2	1	4	2	2	7	4	5
9	7	7	6	6	2	9	2	2	1	1	8	6	1	5	7	6	3	0	1	1	7	4	0	6	2	4
10	8	6	4	7	4	10	1	2	4	4	8	5	1	7	8	7	4	0	0	3	8	7	0	3	0	3
11	8	1	1	8	7	11	1	2	7	7	6	3	1	8	5	6	6	0	6	6	9	10	4	1	0	1
12	6	1	1	8	7	12	1	2	8	8	5	2	1	3	3	4	8	3	8	8	8	10	7	1	1	0
13	6	1	3	6	8	13	1	3	8	6	5	2	1	2	1	3	7	7	8	7	7	4	9	1	3	2
14	6	1	7	3	7	14	4	5	6	4	5	5	5	2	1	2	6	8	7	6	6	1	10	2	4	4
15	6	1	8	1	4	15	8	6	4	2	3	8	6	3	1	1	3	9	6	4	5	1	7	5	4	5
16	6	1	8	1	1	16	8	6	3	1	2	7	7	7	1	0	0	8	5	0	0	4	5	7	4	8
17	3	1	9	1	1	17	8	1	1	1	0	3	8	8	1	0	0	7	3	0	0	7	3	8	3	10
18	1	1	9	2	1	18	6	1	1	1	1	1	8	9	1	0	0	5	2	0	2	7	1	7	2	12
19	1	1	9	4	1	19	3	1	0	1	4	1	2	9	1	0	0	2	0	0	4	8	1	6	1	10
20	1	7	8	6	1	20	1	1	5	1	7	1	1	7	2	0	0	0	1	4	7	10	1	6	0	8
21	6	8	8	7	1	21	1	1	7	7	4	1	2	3	4	2	0	0	2	6	6	11	3	4	1	2
22	8	7	8	8	1	22	1	1	7	8	1	1	5	1	6	4	0	0	3	8	2	12	6	2	1	0
23	9	1	8	8	1	23	1	1	7	2	1	1	9	1	7	5	3	3	5	7	0	13	7	1	1	
24	7	1	8	7	7	24	1	1	6	1	1	1	8	1	3	6	5	6	7	6	0	10	7	1	2	
25	6	2	5	6	7	25	1	1	5	1	1	1	7	1	0	7	7	7	9	6	0	8	7	2	3	
26	6	4	2	4	7	26	1	1	3	1	1	1	6	1	0	7	9	8	8	6	2	7	7	3	4	
27	2	7	3	2	1	27	1	1	1	1	1	1	5	1	0	7	9	9	7	8	5	6	7	5	6	
28	1	7	6	2	1	28	1	1	1	1	2	1	3	3	0	7	7	9	6	7	9	5	7	7	7	
29	0	7	6	2	1	29	1	1	1	1	7	3	1	5	0	0	6	8	5	6	9	1	6	6	7	
30	0	7	5	0	1	30	1	5	1	1	7	6	1	8	2	0	4	8	3	4	7	0	5	4	8	
31	3	7	3	2	5	31	1	7	6	1	5	8	1	8	3	0	2	6	2	3	4	2	3	3	6	
32	6	7	0	3	7	32	1	3	7	1	4	7	4	7	7	0	2	3	0	1	3	4	0	2	4	
33	8	7	0	6	3	33	1	2	6	1	3	5	5	3	8	0	5	0	2	1	3	6	0	1	1	
34	9	7	0	6	2	34	1	2	4	1	2	6	7	1	4	0	8	0	5	2	0	7	1	0	0	
35	8	3	0	5	1	35	1	2	2	1	0	7	9	1	2	0	8	6	8	4	0	10	2	0	1	
36	4	0	3	1	1	36	1	1	0	1	0	6	9	1	1	1	8	8	7	8	0	6	5	2	2	
37	2	3	7	1	1	37	1	0	0	2	0	0	6	1	1	3	8	7	6	8	0	2	7	5	3	
38	1	8	7	1	1	38	1	0	0	2	0	0	1	3	1	5	8	5	5	8	0	0	8	11	5	
39	1	10	6	1	1	39	1	0	0	5	0	5	1	8	1	7	8	2	0	9	0	0	8	10	7	
40	1	10	5	1	1	40	3	0	0	8	0	8	1	8	2	7	8	0	5	9	0	3	7	9	6	
41	1	7	5	1	3	41	7	0	6	3	0	7	5	7	4	4	5	0	7	0	0	6	6	7	5	
42	1	5	5	5	4	42	8	0	7	2	0	6	9	4	6	2	2	2	8	0	5	0	5	7	3	
43	1	3	3	7	6	43	7	0	1	1	0	5	5	1	7	2	2	5	6	2	6	0	2	6	1	
44	1	2	1	10	7	44	7	0	1	1	0	2	3	1	7	4	5	7	5	3	4	0	0	5	1	
45	3	2	1	9	7	45	7	1	1	1	0	1	1	1	8	7	7	7	4	6	3	0	0	5	1	
46	8	1	2	9	8	46	3	5	1	1	0	1	1	1	7	7	8	7	2	6	3	0	2	6	3	
47	8	1	2	9	7	47	1	7	1	1	1	1	1	1	4	6	9	5	0	7	3	0	6	7	7	
48	7	1	3	8	4	48	1	3	3	1	3	1	1	1	1	1	10	2	0	8	4	2	12	8	13	
49	5	1	4	3	0	49	1	1	5	0	7	1	1	1	1	1	8	0	0	7	5	7	11	8	14	
50	2	6	5	2	3	50	1	1	7	3	8	1	1	2	1	2	7	0	0	6	6	8	10	6	13	
51	0	6	6	1	5	51	1	1	5	8	7	6	1	2	1	5	4	0	0	10	6	10	9	4	11	
52	5	5	7	1	5	52	1	1	1	2	7	7	5	3	1	6	2	3	0	5	7	7	8	1	10	
53	7	4	7	1	5	53	1	1	1	1	6	6	7	6	2	8	2	6	5	1	7	6	7	0	7	
54	7	3	6	4	6	54	1	1	1	1	6	6	2	7	4	7	3	7	8	1	7	2	7	0	5	
55	3	2	4	7	6	55	1	1	1	3	5	5	2	7	6	5	6	8	10	3	6	1	6	1	2	
56	1	1	1	2	7	56	1	1	1	5	3	1	2	1	8	1	8	8	8	6	3	1	0	3	1	
57	1	0	1	1	5	57	3	1	1	8	0	1	2	5	5	1	9	8	3	7	0	2	3	5	1	
58	3	0	1	1	2	58	8	1	1	7	0	1	2	6	4	1	7	8	0	8	5	5	6	7	4	
59	5	0	1	1	1	59	5	1	5	6	0	1	2	2	2	2	3	7	0	10	9	6	8	8	6	
60	6	3	3	1	0	60	2	1	6	6	0	1	2	1	1	3	1	6	0	9	9	7	10	8	8	
61	7	6	5	1	2	61	1	3	7	4	0	1	2	1	1	6	2	3	0	7	11	8	8	8	9	
62	8	7	6	1	3	62	1	5	5	3	0	1	2	1	1	7	2	0	0	1	7	10	7	6	9	
63	8	6	7	1	3	63	1	5	4	1	0	1	2	1	3	8	3	0	3	3	4	5	3	3	8	
64	5	5	6	1	3	64	6	3	4	1	4	1	2	1	6	9	3	3	6	5	1	0	1	1	7	
65	3	4	3	1	3	65	8	5	4	1	7	1	2	1	8	9	2	5	7	6	1	1	1	0	5	
66	2	4	1	1	3	66	8	5	5	1	7	5	3	1	4	9	1	7	7	6	1	5	2	1	1	
67	2	5	1	1	4	67	8	1	5	1	1	7	4	1	2	7	0	9	5	5	1	7	5	3	0	
68	3	4	1	5	3	68	8	1	3	1	1	3	7	1	2	3	5	11	4	6	5	9	7	6	2	
69	5	4	1	6	1	69	8	1	2	2	1	1	8	1	2	2	8	12	4	7	10	10	8	8	7	
70	7	4	1	8	1	70	7	1	1	5	1	1	8	2	2	0	8	12	3	8	10	11	9	10	10	
71	3	2	3	8	4	71	1	1	4	6	1	1	5	5	2	3	7	11	0	7	5	11	10	7	8	
72	1	1	6	7	6	72	1	4	4	7	1	2	2	7	3	5	7	10	0	5	0	10	11	4	7	
73	1	1	7	6	7	73	1	6	5	8	1	2	2	8	5	6	1	8	1	2	0	7	11	3	6	
74	1	1	6	5	7	74	1	4	6	9	1	3	2	7	8	8	3	7	3	0	2	3	9	2	5	
75	1	3	3	3	7	75	1	4	7	8	5	4	2	6	10	8	6	6	6	0	6	1	6	2	4	
76	1	8	0	0	5	76	1	4	5	7	7	3	2	6	10	8	7	3	6	0	8	1	0	2	3	
77	2	8	3	0	3	77	1	4	3	7	0	2	2	6	8	6	7	1	5	3	8	2	0	4	2	
78	4	8	7	0	0	78	5	4	1	6	0	1	2	6	5	3	7	1	4	6	8	5	0	6	0	
79	8	7	9	0	0	79	7	1	0	3	0	1	3	6	2	1	6	1	6	7	9	7	0	9	1	
80	7	6	8	0	3	80	7	1	0	2	0	5	5	5	1	4	6	4	8	7	10	7	1	10	3	
81	3	5	6	0	5	81	4	1	0	1	0	7	8	2	1	7	6	7	10	7	10	5	3	7	6	
82	1	1	4	3	6	82	3	1	0	4	0	3	8	2	3	8	6	8	7	8	8	1	5	5	7	
83	1	1	5	5	7	83	2	2	0	6	0	2	8	2	5	9	6	9	1	7	5	1	6	2	8	
84	1	1	6	8	7	84	5	7	4	8	0	1	8	2	8	5	5	7	3	5	0	5	8	0	7	
85	1	1	4	5	8	85	5	4	6	4	3	1	[illegible]	4	10	3	4	7	5	2	0	8	9	0	6	
86	2	1	3	0	8	86	1	3	2	4	6	1	[illegible]	7	10	4	2	6	6	0	0	8	7	2	4	
87	4	1	1	2	9	87	1	1	0	4	8	1	[illegible]	8	9	3	1	5	7	0	0	8	5	3	2	
88	8	2	1	5	10	88	1	1	0	5	7	1	[illegible]	7	8	1	1	2	8	2	2	7	3	6	1	
89	8	10	1	7	8	89	1	1	0	5	6	1	[illegible]	6	8	1	1	1	8	5	5	7	0	9	2	
90	8	10	1	3	6	90	4	1	0	3	5	1	1	6	5	1	1	5	9	8	8	5	3	11	3	
91	8	8	1	0	0	91	6	1	0	2	5	1	2	6	2	1	5	8	10	10	7	3	5	10	5	
92	7	6	1	0	0	92	3	1	1	1	4	1	2	5	1	1	7	9	11	8	6	0	6	9	7	
93	4	6	2	0	0	93	1	1	2	3	3	1	2	4	1	1	8	10	12	7	4	0	7	8	9	
94	1	7	3	0	0	94	1	1	3	4	1	1	4	3	1	1	7	8	8	6	2	0	7	6	9	
95	1	6	4	2	0	95	1	1	6	5	1	1	7	3	1	1	6	7	6	4	0	2	5	4	8	
96	1	4	4	3	0	96	1	2	6	5	2	1	7	1	1	1	6	6	3	2	0	4	5	2	7	
97	1	0	5	4	0	97	1	4	3	4	5	1	5	0	1	1	5	5	2	1	1	6	2	0	5	
98	3	2	5	4	0	98	1	5	2	2	3	1	2	4	2	1	3	3	0	2	2	7	0	3	3	
99	5	[illegible]	5	5	0	99	1	4	1	1	1	1	2	6	4	3	1	1	0	5	4	6	3	6	1	

SUBJECT BIBLIOGRAPHY OF MATERIAL PUBLISHED

BY THE

FOUNDATION FOR THE STUDY OF CYCLES

1940 – 1959

SUBJECT BIBLIOGRAPHY OF MATERIAL PUBLISHED BY THE FOUNDATION FOR THE STUDY OF CYCLES 1940—1959

The material in the bibliography is arranged by subject according to the outline below. Under the various headings the material is arranged chronologically by title except for the section "Articles by Cycle Length" which is arranged by cycle length. Items appear in the bibliography only once and papers merely reprinted by the Foundation are listed at the end.

OUTLINE

VIII. Economics

A. Production, Consumption, Etc.; by Industry
1. Aluminum
2. Automobile
3. Cheese
4. Cigarettes
5. Construction
6. Cotton
7. Iron, Pig
8. Manufacturing
9. Rayon
10. Seed, Grass
11. Steel
12. Textiles

B. Production, Sales, Etc., by Company
1. Allis Chalmers
2. American Viscose
3. Armco Steel
4. Armour
5. Bethlehem Steel
6. Canadian Pacific Railway
7. Company "G"
8. Continental Oil
9. Du Pont
10. General Electric
11. General Motors
12. Goodyear Tire and Rubber
13. Jones and Laughlin
14. Monsanto Chemical
15. Montgomery Ward
16. National Lead
17. Pittsburgh Plate Glass
18. Procter and Gamble
19. Sears, Roebuck
20. Standard Oil of California
21. Swift
22. Wilson
23. Youngstown Sheet and Tube

C. Prices of Commodities
1. General
2. Coffee
3. Copper
4. Corn
5. Cotton
6. Egg
7. Hog
8. Iron, Pig
9. Iron, Wrought
10. Oats
11. Pepper
12. Pipe Fittings
13. Rye
14. Wheat
15. Wholesale

D. Prices of Securities
1. Consols
2. Ordinary Shares
3. Stock
   a. Combined Stocks
   b. Industrial Stocks
   c. Railroad Stocks

E. Financial
1. General
2. Bond Yields
3. Liabilities of Failures

F. Miscellaneous Economic
1. Advertising Efficiency
2. Airplane Traffic
3. Business, General
4. Cattle on Farms
5. Crop Yields
6. Petroleum Inventories
7. Real Estate
8. Trade
9. Wheat Acreage

THE FOUNDATION

"The Inception of the Foundation for the Study of Cycles." E. R. Dewey. Cycles. Vol. II, No. 5, pp. 183-187. May, 1951.
"New Committee Member." (Harold Gardiner Bowen.) Cycles. Vol. II, No. 7, p. 265. Sept., 1951.
"Mr. Burnett Becomes a Director." (Verne E. Burnett.) Cycles. Vol. III, No. 4, p. 145. April, 1952.
"New Committee Member." (Webster N. Jones.) Cycles. Vol. III, No. 5, p. 185. May, 1952.
"John Q. Stewart Becomes a Director." Cycles. Vol. III, No. 8, p. 286. Oct., 1952.
"The Scientific Program." E. R. Dewey. Cycles. Vol. IV, No. 9, pp. 309-310. Nov., 1953.
"New Committee Members." (Alan Gregg and Charles B. Lansing.) Cycles. Vol. VII, No. 8, pp. 232-233. Aug., 1956.
"Cycles, the Foundation for the Study of Cycles, and You." E. R. Dewey. Cycles. Vol. VIII, No. 3, pp. 61-69. March, 1957.
"The New York Chapter." Cycles. Vol. IX, No. 3, pp. 107-108. March, 1958.
"New York Chapter." Cycles. Vol. IX, No. 4, p. 93. April, 1958.
"Professor Kroeber Elected to Committee." (Alfred L. Kroeber.) Cycles. Vol. IX, No. 9, p. 243. Sept., 1958.
"Foundation Affairs, A Program." E. R. Dewey. Cycles. Vol. X, No. 5, p. 110. May, 1959.
"Some of the Contributions of the Foundation for the Study of Cycles to the Science of Cycles During the 9 1/3-Year Period, March, 1950--July, 1959." E. R. Dewey. Cycles. Vol. X, No. 7, pp. 148-154. July, 1959.
"Professor Douglass Elected to Committee." (Andrew E. Douglass.) Cycles. Vol. X, No. 7, p. 159. July, 1959.
"J. H. Douglas Webster Elected to Committee." Cycles. Vol. X, No. 9, p. 207. Sept., 1959.
"Basic Research, the Program." E. R. Dewey. Cycles. Vol. X, No. 12, p. 273. Dec., 1959.

BASIC DATA

"An Index of International War, An Index of Civil War, 599 B.C.-1943 A.D." Raymond H. Wheeler. Cycles. Vol. II, No. 2, pp. 57-79. Feb., 1951.
"Measurements of Tree Ring Widths in the Lukachukai District in Arizona, 54 B.C.-1939 A.D." Harold S. Gladwin. Cycles. Vol. II, No. 5, pp. 195-200. May, 1951.
"Prices 1933-1950 in Terms of Gold." Cycles. Vol. II, No. 6, pp. 235-237. June, 1951.
"Pig Iron Prices in the United States, 1784-1951." Alla Malinowski. Journal of Cycle Research. Vol. 1, No. 3, pp. 68-75. Spring, 1952.
"Index of Railroad Stock Prices, 1831-1951." Cycles. Vol. III, No. 4, p. 143. April, 1952.
"A Composite Index of Lynx Abundance, 1735-1950." Leonard W. Wing. Journal of Cycle Research. Vol. 2, No. 1, pp. 21-24. Winter, 1952-1953.
"Dates of Hayes River Ice Break Up, York Factory, Manitoba." Hudson's Bay Company. Journal of Cycle Research. Vol. 2, No. 4, p. 60. Fall, 1953.
"Average Cost of a Bushel of Wheat in England from the Year 1260 to the Year 1918 Inclusive." (Chart.) Cycles. Vol. IV, No. 4, p. 117. April, 1953.
"Average Cost of a Ton of Wrought Iron in England from the Year 1277 to the Year 1918 Inclusive." (Chart.) Cycles. Vol. IV, No. 4, p. 118. April, 1953.
"Flood-Stage Records of the River Nile." C. S. Jarvis. Journal of Cycle Research. Vol. 2, No. 4, pp. 96-100. Fall, 1953.
"Sunspot Maxima Since 649 B.C." D. Justin Schove. Journal of Cycle Research. Vol. 5, No. 4, pp. 110-111. Oct., 1956. See also Cycles. Vol. VIII, No. 2, p. 53. Feb., 1957.

MISCELLANEOUS

Matamek Conference on Biological Cycles. 305 pp. 1941.
Directory of the Foundation for the Study of Cycles. 1941.
Cycles, The Science of Prediction. E. R. Dewey and Edwin F. Dakin. New York: Henry Holt and Company, 1947. See also Cycles. Vol. IV, No. 6, pp. 197-207. June-July, 1953. Ibid. No. 7, pp. 233-246. Sept., 1953. Ibid. No. 8, pp. 279-286. Oct., 1953. Ibid. No. 9, pp. 315-322. Nov., 1953. Ibid. Vol. V, No. 1, pp. 25-31. Jan., 1954. Ibid. No. 3, pp. 97-107, 117-118. March, 1954. Ibid. No. 4, pp. 143-151. April, 1954. Ibid. No. 5, pp. 189-198. May, 1954. Ibid. No. 6, pp. 233-238. June-July, 1954. Ibid. No. 7, pp. 262-270. Aug.-Sept., 1954. Ibid. No. 8, pp. 299-302. Oct., 1954. Ibid. Vol. VI, No. 1, pp. 23-28. Jan., 1955. Ibid. No. 2, pp. 59-66. Feb., 1955.
Postscripts to Cycles, The Science of Prediction are as follows:
"1953 Postscript to Chapter II." Cycles. Vol. IV, No. 6, p. 207. June-July, 1953.
"1953 Postscript to Chapters III and IV." Ibid. No. 7, p. 244. Sept., 1953.
"1953 Postscript to Chapter V." Ibid. No. 8, p. 286. Oct., 1953.
"1953 Postscript to Chapter VI." Ibid. No. 9, pp. 322-326. Nov., 1953.
"1954 Postscript to Chapter VII." Ibid. Vol. V, No. 1, pp. 32-39. Jan., 1954.
"1954 Postscript to Chapter VIII." Ibid. No. 3, pp. 108-116. March, 1954.
"1954 Postscript to Chapter IX." Ibid. No. 4, pp. 152-159. April, 1954.
"1954 Postscript to Chapter X." Ibid. No. 5, p. 199. May, 1954.
"1954 Postscript to Chapter XII." Ibid. No. 7, p. 270. Aug.-Sept., 1954.
"1955 Postscript to Chapter XIV." Ibid. Vol. VI, No. 1, pp. 29-34. Jan., 1955.
"Calendars for 201 Years, 1776-1976." Cycles. Vol. II, No. 5, pp. 190-194. May, 1951.
"Standard Month Numbers." Journal of Cycle Research. Vol. 1, No. 5, pp. 153-158. Fall, 1952. See also Cycles. Vol. III, No. 9, pp. 319-324. Nov., 1952.
"Standard Quarter-Year Numbers." Journal of Cycle Research. Vol. 2, No. 4, pp. 101-102. Fall, 1953.
"The Geisinger Industrial Production Indicator." E. R. Dewey. Cycles. Vol. V, No. 7, pp. 253-255. Aug.-Sept., 1954.
"Samuel Turner Benner, Pioneer Cycle Analyst." (A Biography.) E. R. Dewey. Cycles. Vol. VI, No. 3, pp. 86-87. March, 1955.

"The 1955 Postscript to Cycles, the Science of Prediction, Introduction, Part I: Growth." E. R. Dewey. Cycles. Vol. VI, No. 10, pp. 293-306. Dec., 1955.
"The Modified Geisinger Indicator." E. R. Dewey. Cycles. Vol. VIII, No. 3, pp. 77-79. March, 1957.
"Industrial Production, U.S.A., 1st Difference Indicator." Cycles. Vol. IX, No. 4, p. 94. April, 1958.
"The Geisinger Indicator, How Good Is It?" E. R. Dewey. Cycles. Vol. IX, No. 10, pp. 253-259. Oct., 1958.

CYCLES AS SUCH

General

"Putting Cycles to Work in Science and Industry." E. R. Dewey. A Booklet. 24 pp. 1941. Foundation Reprint No. 11. 24 pp. 1945.
"A List of Rhythms Variously Determined and/or Alleged." E. R. Dewey. A Booklet. 13 pp. 1949. Foundation Reprint No. 38, in Cycles. Vol. VII, No. 11, pp. 299-305. Nov., 1956.
"The Callippic Cycle." E. R. Dewey. Cycles. Vol. II, No. 6, p. 228. June, 1951.
"The Metonic Cycle." E. R. Dewey. Cycles. Vol. II, No. 6, p. 228. June, 1951.
"The Law of Cycle Length." E. R. Dewey. Cycles. Vol. IV, No. 4, pp. 113-114. April, 1953.
"Non-Symmetrical Cycles." E. R. Dewey. Cycles. Vol. VI, No. 2, pp. 48-49. Feb., 1955.
"Three Hypotheses." E. R. Dewey. Cycles. Vol. VI, No. 3, pp. 74-76. March, 1955.
"The 18.2-Year Cycle in Other Phenomena." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, p. 59. April, 1955. See also Cycles. Vol. VI, No. 4, p. 129. April, 1955.
"The 17.7 and 18.2-Year Cycles Not Present in Various Phenomena." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, p. 60. April, 1955. See also Cycles. Vol. VI, No. 4, p. 130. April, 1955.
"A New Idea About Cycles." E. R. Dewey. Cycles. Vol. VI, No. 8, pp. 234-235. Oct., 1955.
"Rhythmic Cycles." E. R. Dewey. Cycles. Vol. VII, No. 1, pp. 5-14. Jan., 1956. Ibid. No. 2, pp. 33-44. Feb., 1956.
"Frontiers of Science." John J. Grebe. Cycles. Vol. VII, No. 5, pp. 135-144. May, 1956.
"Cycles: The Problem and the Solution." E. R. Dewey. Cycles. Vol. VIII, No. 8, pp. 209-213. Aug., 1957.
"Irregular Cycles (Regular Irregularity)." E. R. Dewey. Cycles. Vol. VIII, No. 12, pp. 313-317. Dec., 1957.
"The Use of Cycles in Forecasting Commodity Price Cycles." David Williams. Cycles. Vol. IX, No. 8, pp. 195-196. Aug., 1958.
"Cycles--Fact or Fiction--Free Ride or Disaster?" Joseph Earl Perry. Cycles. Vol. IX, No. 8, pp. 197-200. Aug., 1958.
"Some Basic Cycle Concepts." E. R. Dewey. Cycles. Vol. X, No. 1, pp. 8-10. Jan., 1959.
"The Three Kinds of Cycles." E. R. Dewey. Cycles. Vol. X, No. 5, p. 104. May, 1959.
"Cycles, The Science." E. R. Dewey.
"Part I: The Hypothesis." Cycles. Vol. X, No. 6, p. 129. June, 1959.
"Part II: Possible Causes." Ibid. No. 8, p. 176. Aug., 1959.
"Part III: The Moon as a Cause of Cycles." Ibid. No. 9, pp. 197-205. Sept., 1959. Ibid. No. 10, pp. 228-229. Oct., 1959.
"Part IV: The Sun as a Cause of Cycles." Ibid. No. 12, pp. 269-272. Dec., 1959.

Latitudinal Passage

"Dr. Wing's Latest Cycle Discoveries." E. R. Dewey. Cycles. Vol. V, No. 5, pp. 165-175. May, 1954.
"Global Pattern of 4.222-Year Cycles in Temperature." Leonard W. Wing. Journal of Cycle Research. Vol. 3, No. 3, pp. 55-83. Summer, 1954.
"Latitudinal Slippage of Bob-White, Hairy Woodpecker, and Downy Woodpecker Cycles." Leonard W. Wing. Journal of Cycle Research. Vol. 4, No. 1, pp. 3-31. Jan., 1955.
"Global Patterns of Cycles in Temperature." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 175-179. June-July, 1955.
"Ultra-Long Waves and Global Patterns of Temperature." Leonard W. Wing. Journal of Cycle Research. Vol. 5, No. 2, pp. 31-59. April, 1956.
"Latitudinal Passage Behavior." Leonard W. Wing. Journal of Cycle Research. Vol. 7, No. 3, pp. 67-78. July, 1958.
"Cycle Timing Varies with Latitude." E. R. Dewey. Cycles. Vol. IX, No. 11, pp. 288-292. Nov., 1958.

Articles by Cycle Length

"The 17-Week Cycle." E. R. Dewey. Cycles. Vol. IX, No. 12, pp. 315-316. Dec., 1958.
"The 5.91-Year Cycle." E. R. Dewey. Cycles. Vol. VIII, No. 1, pp. 17-21. Jan., 1957. Ibid. No. 4, pp. 99-108. April, 1957.
"The 6-Year Cycle." E. R. Dewey. Cycles. Vol. I, No. 5, pp. 3-17. Dec., 1950.
"The 6-Year Cycle." E. R. Dewey. Cycles. Vol. III, No. 10, pp. 337-341. Dec., 1952.
"Observations of the 6-Year Cycle." Charles H. Pinkham. Cycles. Vol. VII, No. 5, pp. 129-134. May, 1956.
"The 8-Year Cycle." E. R. Dewey. Cycles. Vol. IV, No. 5, pp. 142-144. May, 1953.
"The 8-Year Cycle." E. R. Dewey. Cycles. Vol. VII, No. 10, pp. 271-274. Oct., 1956. Ibid. No. 11, pp. 309-313. Nov., 1956.
"The 8- to 9-Year Cycles." E. R. Dewey. Cycles. Vol. VII, No. 9, pp. 251-257. Sept., 1956.
"The 9-Year Cycle." E. R. Dewey. Cycles. Vol. VII, No. 5, pp. 145-153. May, 1956. Ibid. No. 6, pp. 167-174. June, 1956. Ibid. No. 7, pp. 211-213. July, 1956.
"Comment on the '9'-Year Cycle." E. R. Dewey. Cycles. Vol. IX, No. 11, pp. 299-301. Nov., 1958.
"The 9.2-Year Cycle." E. R. Dewey. Cycles. Vol. VII, No. 3, pp. 66-76. March, 1956.
"The 12- to 12.9-Year Cycles." E. R. Dewey. Cycles. Vol. VIII, No. 7, pp. 177-184. July, 1957.
"The 16 2/3-Year Cycle." E. R. Dewey. Cycles. Vol. X, No. 1, p. 10. Jan., 1959.
"The 17 3/4- and 18 1/5-Year Cycles in Various Phenomena." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 35-60. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 103-130. April, 1955.
"The 37-Year Cycle." E. R. Dewey. Cycles. Vol. II, No. 8, pp. 277-278. Oct., 1951.
"The 37-Year Cycle." E. R. Dewey. Cycles. Vol. IX, No. 5 & 6, pp. 118-119. May-June, 1958.

Interrelationships (Phenomena)

"Cycles in the Far East." H. Nishioka and T. Shiraishi. Cycles. Vol. III, No. 2, p. 53. Feb., 1952.
"Cycles in Wheat Prices and in Weather." Cycles. Vol. IV, No. 10, pp. 340-341. Dec., 1953.
"International Battles and the Double Sunspot Cycle." W. A. Moore, Jr. Cycles. Vol. VII, No. 12, p. 328. Dec., 1956.
"Ultra Long Waves and Solar Terrestrial Cycle Relationships." Leonard W. Wing. Journal of Cycle Research. Vol. 6, No. 3 & 4, pp. 55-119. July-Oct., 1957.
"Sunspots and Stock Prices." E. R. Dewey. Cycles. Vol. VIII, No. 8, p. 207. Aug., 1957.
"Some New Cycle Work by G. T. Lane." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. VIII, No. 10, pp. 257-265. Oct., 1957.
"Solar-Terrestrial Relations Indicating Possible Cosmic Waves." Leonard W. Wing. Journal of Cycle Research. Vol. 8, No. 3, pp. 67-95. July, 1959.

Interrelationships (Wave Length)

"Order Out of Chaos?" E. R. Dewey. Cycles. Vol. III, No. 7, pp. 236-239. Sept., 1952.
"The Law of Cycle Length." E. R. Dewey. Cycles. Vol. IV, No. 4, pp. 113-114. April, 1953.
"Are Cycle Lengths Related?" E. R. Dewey. Cycles. Vol. VI, No. 1, pp. 5-9. Jan., 1955.
"A Fundamental 600-Year Cycle?" E. R. Dewey. Cycles. Vol. VI, No. 5, pp. 139-140. May, 1955.
"Stock Market Cycles Fit the Musical Scale." D. S. Castle. Cycles. Vol. VII, No. 12, pp. 336-337. Dec., 1956.
"The 17 3/4-Year Complex." E. R. Dewey. Cycles. Vol. X, No. 2, pp. 34-35. Feb., 1959.

TECHNICAL

"The Detection and Isolation of Rhythms--An Outline." E. R. Dewey. Technical Bulletin. 4 pp. 1941. See also Foundation Reprint No. 13. 5 pp. 1945.
"Testing Cycles for Statistical Significance." Charles E. Armstrong. Foundation Publication No. 12. 13 pp. 1945. See also Journal of Cycle Research. Vol. 1, No. 3, pp. 87-92. Spring, 1952.
"Cycle Analysis: A Description of the Hoskins Time Chart." E. R. Dewey. Technical Bulletin No. 3. 13 pp. 1949.
"The Yeatman-Lane Modified Moving Percentage and the Lane Weighted Section Moving Average." E. R. Dewey. Cycles. Vol. I, No. 1, pp. 12-15. June, 1950.
"How to Get Hints of Cycles." E. R. Dewey. Cycles. Vol. I, No. 2, pp. 19-22. Sept., 1950. Ibid. No. 3, pp. 23-27. Oct., 1950.
"Hoskins Standard Month Numbers." Cycles. Vol. I, No. 2, pp. 22-23. Sept., 1950.
"Does a 6-Year Moving Average Make a 6-Year Wave?" E. R. Dewey. Cycles. Vol. I, No. 2, pp. 24-25. Sept., 1950.
"The June Meeting of the New York Chapter." (The Bagno-Works Analyzer and Synthesizer.) E. R. Dewey. Cycles. Vol. I, No. 2, pp. 29-32. Sept., 1950.
"The Bagno-Works Analyzer and Synthesizer." E. R. Dewey. Cycles. Vol. I, No. 3, pp. 28-29. Oct., 1950.
"Compound Cycles." E. R. Dewey. Cycles. Vol. I, No. 5, pp. 18-20. Dec., 1950.
"Cycle Analysis: The Moving Average." E. R. Dewey. Technical Bulletin No. 4. 37 pp. 1950. See also Cycles. Vol. II, No. 8, pp. 297-322. Oct., 1951. See also Journal of Cycle Research. Vol. 3, No. 2, pp. 27-50. Spring, 1954.
"The Periodogram." E. R. Dewey. Cycles. Vol. II, No. 3, p. 94. March, 1951.
"Long Cycles in Cotton Prices." E. R. Dewey. Cycles. Vol. I, No. 4, pp. 17-19. Nov., 1950. Ibid. Vol. II, No. 4, p. 140. April, 1951.
"Multiple Harmonic Analysis Applied to Cotton Prices, 1731-32--1939-40." E. R. Dewey. Cycles. Vol. I, No. 4, pp. 20-26. Nov., 1950. Ibid. Vol. II, No. 4, pp. 141-142. April, 1951.
"The Use of Color in the Periodic Table." E. R. Dewey. Cycles. Vol. II, No. 5, pp. 179-180. May, 1951.
"Limitations of the Periodogram." E. R. Dewey. Cycles. Vol. II, No. 6, pp. 229-232. June, 1951.
"Synchronized Cyclic Processes." Jerome R. Tichy. Journal of Cycle Research. Vol. 1, No. 1, pp. 26-27. Autumn, 1951.
"A New Form of Periodogram." E. R. Dewey. Journal of Cycle Research. Vol. 1, No. 2, pp. 54-57. Winter, 1951-1952.
"Cycles in Random Numbers." E. R. Dewey. Cycles. Vol. III, No. 1, pp. 9-12. Jan., 1952.
"The Use of Weighted Moving Averages in Cycle Analysis." E. R. Dewey. Cycles. Vol. III, No. 1, pp. 18-19. Jan., 1952.
"Cycles in the Sales and Advertising of the Pinkham Medicine Company, A Method for Evaluating Advertising and Predicting Sales." Charles H. Pinkham. Cycles. Vol. III, No. 1, pp. 25-34. Jan., 1952.
"Cycles in the Stock Market." E. R. Dewey. Cycles. Vol. III, No. 2, pp. 42-49. Feb., 1952.
"Cycle Analysis for the Beginner." E. R. Dewey. Cycles. Vol. III, No. 3, pp. 97-98. March, 1952.
"The Ratio or Semi-Logarithmic Scale." E. R. Dewey. Cycles. Vol. III, No. 8, pp. 278-281. Oct., 1952.
"Predix Techniques." Vedder Hughey. Cycles. Vol. IV, No. 3, pp. 75-78. March, 1953.
"Limited Data." E. R. Dewey. Cycles. Vol. V, No. 7, p. 252. Aug.-Sept., 1954.
"Effects of Moving Averages." E. R. Dewey. Cycles. Vol. V, No. 8, p. 294. Oct., 1954.
"Combination of Cycles." H. K. Rutherford. Cycles. Vol. VI, No. 3, pp. 88-90. March, 1955.
"On the Significance of Recurring Patterns in Serially Correlated Economic Time Series." Vedder Hughey. Journal of Cycle Research. Vol. 4, No. 3, pp. 73-82. July, 1955.
"A Method for Separating Cycles and Its Use in Conjunction with Other Methods." W. C. Yeatman. Journal of Cycle Research. Vol. 4, No. 4, pp. 86-119. Oct., 1955.
"A New Electronic Cycle Analyzer." Vedder Hughey. Cycles. Vol. VI, No. 10, pp. 307-310. Dec., 1955.
Cycle Analysis (Popularly known as How to Make a Cycle Analysis.) E. R. Dewey. 1955, 1956.
"A Description of the Hoskins Time Chart." Paul T. Davis. Journal of Cycle Research. Vol. 5, No. 1, pp. 3-17. Jan., 1956.
"Isolation of Periodic Components in Economic Time Series, Approximate Solution by Electronic Analysis." Vedder Hughey. Journal of Cycle Research. Vol. 5, No. 1, pp. 19-27. Jan., 1956.
"The Beginner's Corner, Arithmetic Line Charts." E. R. Dewey. Cycles. Vol. VIII, No. 3, pp. 75-76. March, 1957.
"The Beginner's Corner, Ratio Line Charts." G. Shirk. Cycles. Vol. VIII, No. 4, pp. 110-113. April, 1957. Ibid. No. 6, pp. 166-169. June, 1957. Ibid. No. 8, pp. 218-221. Aug., 1957.
"Another Way of Looking at Cycles." E. R. Dewey. Cycles. Vol. IX, No. 1, pp. 13-16. Jan., 1958.

"The Beginner's Corner, Finding Cycles." E. R. Dewey. Cycles. Vol. IX, No. 1, pp. 31-32. Jan., 1958.
"How to Get Hints of Cycles." E. R. Dewey. Cycles. Vol. IX, No. 4, p. 96. April, 1958.
"How to Get Hints of Cycles--The Graduated Scale." E. R. Dewey. Cycles. Vol. IX, No. 11, p. 302. Nov., 1958.
"Adventures in Forecasting." H. K. Rutherford.
"Part I: Structure of Component Cycles, Part II: Development of Component Cycles." Cycles. Vol. IX, No. 12, pp. 326-330. Dec., 1958.
"Part III; The Single Move." Ibid. Vol. X, No. 1, pp. 15-18. Jan., 1959.
"Part IV: The Complete Cycle." Ibid. No. 4, pp. 86-88. April, 1959.
"Part V: A Practical Illustration." Ibid. No. 5, pp. 106-107. May, 1959.
"Cycle Workshop, How to Get Hints of Cycles--The Time Chart." E. R. Dewey. Cycles. Vol. X, No. 6, pp. 133-134. June, 1959.
Supplement Pertaining to the January, 1959 Article, "Adventures in Forecasting, Part III: The Single Move." H. K. Rutherford. Cycles. Vol. X, No. 8, p. 180. Aug., 1959.
"Cycle Workshop, The Moving Average." E. R. Dewey. Cycles. Vol. X, No. 10, p. 230. Oct., 1959.

NATURAL SCIENCE

Astronomy

Comets

"Comet Cycles." E. R. Dewey. Cycles. Vol. VIII, No. 6, p. 159. June, 1957.

Moon

"Periodicity in the Sequence of Irregular Time Intervals Between Successive Appearances of the Moon in Perigee." Hector H. Wolfe. Journal of Cycle Research. Vol. 8, No. 4, pp. 99-107. Oct., 1959.

Planets

"Astronomical Cycles." E. R. Dewey. Cycles. Vol. II, No. 4, pp. 135-137. April, 1951.
"The Cycles of the Planets." E. R. Dewey. Cycles. Vol. IV, No. 7, pp. 219-221. Sept., 1953.
"Bisection Periods of the Planets." E. R. Dewey. Cycles. Vol. VI, No. 9, pp. 267-272. Nov., 1955. NOTE: A typographical error in Table 1 is corrected in Cycles. Vol. VII, No. 1, p. 24. Jan., 1956.

Solar Activity

"The 22 1/5-Year Cycle in Relative Sunspot Numbers with Alternate Cycles Reversed, 1749-1949." E. R. Dewey. Cycles. Vol. I, No. 1, pp. 8-11. June, 1950.
"The 18-Year Cycle in Sunspots with Alternate Cycles Reversed." E. R. Dewey. Cycles. Vol. I, No. 2, pp. 8-10. Sept., 1950.
"Sunspots Before 1750." E. R. Dewey. Cycles. Vol. II, No. 7, pp. 253-254. Sept., 1951.
"The 37-Year Cycle in the Variation in the Length of Time Between Sunspot Maxima, 301 A.D.-1928 A.D." E. R. Dewey. Cycles. Vol. II, No. 8, pp. 279-282. Oct., 1951.
"The 37-Year Cycle in Sunspots with Alternate Cycles Reversed (Since 1749)." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 9, pp. 341-344, 346-348. Nov., 1951.
"The 8-Month Cycle in Sunspot Numbers, 1749-1950." Gerould T. Lane. Journal of Cycle Research. Vol. 1, No. 4, pp. 101-131. Summer, 1952.
"The Sunspot Cycle, A.D. 301-1950." D. Justin Schove. Journal of Cycle Research. Vol. 2, No. 4, pp. 90-93. Fall, 1953.
"Cycles in Solar Heat." E. R. Dewey. Cycles. Vol. IV, No. 4, pp. 105-108. April, 1953.
"C. N. Anderson's Sunspot Cycles." E. R. Dewey. Cycles. Vol. IV, No. 5, pp. 147-149. May, 1953.
"Cycles in Sunspot Numbers." E. R. Dewey. Cycles. Vol. V, No. 8, pp. 284-285. Oct., 1954.
"Cycles in Sunspot Numbers." Gerould T. Lane. Journal of Cycle Research. Vol. 3, No. 1, pp. 3-22. Winter, 1954.
"The 17 2/3- and 18 1/5-Year Cycles in Sunspots with Alternate Cycles Reversed, 1749-1954." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 46-49. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 116-119. April, 1955.
"The 4-Year Cycle in Sunspot Numbers with Alternate Cycles Reversed, 1749-1954." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 186-187. June-July, 1955.
"The Length of the Sunspot Cycle." E. R. Dewey. Journal of Cycle Research. Vol. 7, No. 3, pp. 79-91. July, 1958.
"The 11-Year Cycle in Sunspots." E. R. Dewey. Cycles. Vol. IX, No. 8, pp. 185-186. Aug., 1958.

Stars

"Variable Stars." E. R. Dewey. Cycles. Vol. IV, No. 4, p. 112. April, 1953.
"Cycles of Variable Stars." E. R. Dewey. Cycles. Vol. X, No. 5, p. 105. May, 1959.

Biology

Wildlife Abundance

"The 9.6-Year Cycle of Lynx Abundance." E. R. Dewey. Cycles. Vol. I, No. 3, pp. 10-13. Oct., 1950.
"Wildlife Cycles." E. R. Dewey. Cycles. Vol. II, No. 2, pp. 47-48. Feb., 1951. Ibid. No. 5, p. 169. May, 1951.
"Causation of the Nine or Ten Year Salmon Cycle." A. G. Huntsman. Journal of Cycle Research. Vol. 1, No. 2, pp. 43-53. Winter, 1951-1952.
"The 9.6-Year Cycle of Game Abundance." E. R. Dewey. Cycles. Vol. III, No. 5, p. 180. May, 1952.
"The 9.6-Year Cycle in Lynx Abundance." E. R. Dewey. Cycles. Vol. III, No. 8, pp. 284-285. Oct., 1952.

"Cycles of Lynx Abundance." Leonard W. Wing. Journal of Cycle Research. Vol. 2, No. 2, pp. 28-51. Spring, 1953.
"Cycles in Flight Years of Snowy Owl, Evening Grosbeak and Pine Grosbeak." Leonard W. Wing. Journal of Cycle Research. Vol. 2, No. 2, p. 52. Spring, 1953.
"The 22 2/3-Year Cycle in the Abundance of the European Partridge." E. R. Dewey. Cycles. Vol. IV, No. 4, pp. 109-111. April, 1953.
"Cycles in European Partridge Abundance." Leonard W. Wing. Journal of Cycle Research. Vol. 2, No. 3, pp. 56-76. Summer, 1953.
"The 9.3-Year Cycle in Grasshopper Outbreaks." E. R. Dewey. Cycles. Vol. IV, No. 6, pp. 176-177. June-July, 1953.
"The 9.6-Year Cycle in Lynx Abundance." E. R. Dewey. Cycles. Vol. V, No. 7, pp. 250-251. Aug.-Sept., 1954.
"The 22 2/3-Year Cycle in Grasshopper Outbreaks." E. R. Dewey. Cycles. Vol. V, No. 9, pp. 316-319. Nov., 1954.
"Time Chart Measurements of Norwegian Lemming and Rodent Cycles." Leonard W. Wing. Journal of Cycle Research. Vol. 6, No. 1, pp. 3-15. Jan., 1957.
"The 2-Year Cycle of the Evening Grosbeak." L. Sherwin. Cycles. Vol. X, No. 3, p. 56. March, 1959.
"The 9.6-Year Cycle in Canadian Lynx." G. Shirk. Cycles. Vol. X, No. 4, pp. 80-81. April, 1959.
"The 3.67-Year Cycle in the Pine Grosbeak." G. Shirk. Cycles. Vol. X, No. 6, p. 128. June, 1959.
"The 9.7-Month Cycle in 'Wideawake Fairs.'" G. Shirk. Cycles. Vol. X, No. 11, pp. 250-251. Nov., 1959.

Wildlife Activity

"The Daily Cycle in the Body Temperature of Birds." E. R. Dewey. Cycles. Vol. I, No. 3, pp. 14-15. Oct., 1950.
"The 6 1/4-Hour Cycle of Wildlife Activity." E. R. Dewey. Cycles. Vol. VII, No. 10, p. 269. Oct., 1956.
"Cycles of the Fiddler Crab." G. Shirk. Cycles. Vol. X, No. 6, p. 132. June, 1959.

Plant Behavior

"Cycles in Tree Ring Widths, Lukachukai District, Arizona, Hint of a 54-Year Rhythm and Data, 53 B.C. to 1947 A.D." E. R. Dewey. Foundation Report No. 4. 16 pp. 1949.
"Cycles in Tree Ring Widths, Lukachukai District, Arizona, Hint of 17 3/4-Year Rhythm and Data, 53 B.C. to 1947 A.D." E. R. Dewey. Foundation Report No. 5. 16 pp. 1949.
"Cycles in Tree Ring Widths, Lukachukai District, Arizona, Hint of a 6-Year Rhythm and Data, 53 B.C. to 1947 A.D." E. R. Dewey. Foundation Report No. 7. 16 pp. 1949.
"Cycles in the Electric Potential of Trees." E. R. Dewey. Cycles. Vol. I, No. 4, pp. 15-16. Nov., 1950.
"Daily Rings in Cotton Fibers." E. R. Dewey. Cycles. Vol. II, No. 5, pp. 166-168. May, 1951.
"The 9.6-Year Cycle in Arizona Tree Rings." E. R. Dewey. Cycles. Vol. III, No. 9, p. 300. Nov., 1952.
"The 18.2-Year Cycle in Java Tree Rings, 1514-1929." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, p. 54. April, 1955. See also Cycles. Vol. VI, No. 4, p. 124. April, 1955.
"The 17 3/4-Year Cycle in Arizona Tree Rings, A.D. 931-1939." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, p. 58. April, 1955. See also Cycles. Vol. VI, No. 4, p. 128. April, 1955.
"The 16 2/3-Year Cycle in Arizona Tree Rings, A.D. 900-1939." E. R. Dewey. Cycles. Vol. VI, No. 5, p. 148. May, 1955.
"The 16 2/3-Year Cycle in Java Tree Rings, 1514-1929." E. R. Dewey. Cycles. Vol. VI, No. 5, p. 148. May, 1955.
"The 6-Month Cycle in the Electric Potential of Trees." E. R. Dewey. Cycles. Vol. VII, No. 8, pp. 229-231. Aug., 1956.
"Seasonal Cycles in Plants." G. Shirk. Cycles. Vol. X, No. 8, p. 179. Aug., 1959.

Climatology

Air Currents

"The 3- to 4-Week Cycle of Antarctic Air Currents." E. R. Dewey. Cycles. Vol. VIII, No. 8, p. 208. Aug., 1957.

Barometric Pressure

"The 8-Year Cycle in Barometric Pressure at New York City." (For revised length see the next reference.) E. R. Dewey. Cycles. Vol. IV, No. 5, pp. 145-146. May, 1953.
"The 7.6-Year Cycle in Barometric Pressure at New York City, 1873-1955." E. R. Dewey. Cycles. Vol. VII, No. 11, pp. 297-298. Nov., 1956.
"Barometric Pressure at New York City." E. R. Dewey. Cycles. Vol. X, No. 8, p. 189. Aug., 1959.

Precipitation

"The 9 2/3-Year Rhythm in Rainfall, Rihand and Sone River Watersheds, United Provinces, India, 1903-1947." E. R. Dewey. Foundation Report No. 10. 19 pp. 1950. See also Journal of Cycle Research. Vol. 1, No. 5, pp. 306-315. Fall, 1952. See also Cycles. Vol. III, No. 9, pp. 306-315. Nov., 1952.
"The Forecast of Drought." A. Streiff. Journal of Cycle Research. Vol. 3, No. 4, pp. 89-98. Fall, 1954.
"Cycles in Rainfall at Santa Barbara, California, 1867-68--1954-55." Gerould T. Lane. Cycles. Vol. VII, No. 1, pp. 17-20. Jan., 1956.
"Forecasting Rainfall." E. R. Dewey. Cycles. Vol. IX, No. 1, pp. 9-10. Jan., 1958.
"Cycle Forecasts of Santa Barbara Rainfall." Gerould T. Lane. Cycles. Vol. X, No. 2, pp. 36-39. Feb., 1959.

Temperature

"Cyclic Trends in Arctic Seasons." Leonard W. Wing. Journal of Cycle Research. Vol. 1, No. 1, pp. 20-25. Autumn, 1951.
"The 40,000-Year Cycle in World Temperature." Edward Hettich. Cycles. Vol. IX, No. 7, pp. 157-158. July, 1958.

Climate as Such

"The 700-Year Cycle in Japanese Climate." E. R. Dewey. Cycles. Vol. II, No. 9, pp. 337-340. Nov., 1951.
"Dr. Abbot's Sixty-Year Weather Forecasts." E. R. Dewey. Cycles. Vol. VII, No. 12, pp. 329-332. Dec., 1956.

Electricity and Magnetism

Aurora

"The 37-Year Cycle in the Frequency of the Aurora Borealis (Since 385 A.D.)" E. R. Dewey. Cycles. Vol. II, No. 10, pp. 367-370. Dec., 1951.
"The 700-Year Cycle of the Climate and the Aurora Borealis." Hideo Nishioka. Cycles. Vol. III, No. 1, p. 13. Jan., 1952.

Radio Propagation Quality

"Planetary Effects on Shortwave Radio." John H. Nelson. Cycles. Vol. III, No. 3, pp. 87-89. March, 1952.
Progress Report. John H. Nelson. Cycles. Vol. IV, No. 5, pp. 155-156. May, 1953.
"Cycles in Radio Disturbance." E. R. Dewey. Cycles. Vol. VI, No. 8, pp. 229-233. Oct., 1955.
"John Nelson's Latest Discoveries Relative to Cycles in Radio Weather." Jack A. Dorland. Cycles. Vol. IX, No. 12, pp. 322-325. Dec., 1958.

Geology

"The 37-Year Cycle in the Frequency of Chinese Earthquakes (Since 200 A.D.)" E. R. Dewey. Cycles. Vol. III, No. 1, pp. 14-15. Jan., 1952. (Together with the techniques used in its determination.) E. R. Dewey. Ibid. No. 6, pp. 212-219. June, 1952.
"Periodic Geysers." E. R. Dewey. Cycles. Vol. IV, No. 1, pp. 6-8. Jan., 1953.
"The 17 3/4-Year Cycle in Chinese Earthquakes, A.D. 54-1651." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, p. 50. April, 1955. See also Cycles. Vol. VI, No. 4, p. 120. April, 1955.
"Cycles in the Advance and Recession of Glaciers." E. R. Dewey. Cycles. Vol. VIII, No. 9, p. 237. Sept., 1957.
"The 11-Year Cycle in the Abundance of Earthquakes, 1305-1898." E. R. Dewey. Cycles. Vol. IX, No. 3, pp. 86-87. March, 1958.

Medicine

"Cycles in Influenza." E. R. Dewey. Cycles. Vol. II, No. 3, pp. 89-93. March, 1951.
"The 9-Year Cycle in Social Disease." E. R. Dewey. Cycles. Vol. III, No. 1, p. 17. Jan., 1952.
"The 14-Day Cycle in the Amorousness of Women." Cycles. Vol. III, No. 5, pp. 181-183. May, 1952.
"Seasonal Cycles of the Common Cold and Their Relationship to Susceptibility." L. Peter Cogan. Journal of Cycle Research. Vol. 4, No. 3, pp. 63-72. July, 1955.

ANTHROPOLOGY, HISTORY, SOCIOLOGY

Births of Infants

"A 29 1/2-Day Cycle in the Births of Infants." E. R. Dewey. Cycles. Vol. I, No. 2, pp. 15-17. Sept., 1950.

Dress Fashions, Women's

"Cycles in Women's Dress Fashions." Cycles. Vol. III, No. 4, pp. 131-134. April, 1952.

History

"1959 and a Cyclical Theory of History." Edward A. Lewin. Cycles. Vol. IX, No. 1, pp. 11-12. Jan., 1958.
Appendix to "1959 and a Cyclical Theory of History." Edward A. Lewin. Cycles. Vol. IX, No. 5 & 6, p. 133. May-June, 1958.
"The Long Cycle of Civilization." James A. Block. Cycles. Vol. IX, No. 5 & 6, p. 134. May-June, 1958.
"Gray Epicycle Theory." H. B. Van Houten. Cycles. Vol. IX, No. 11, pp. 293-294. Nov., 1958.

Human Abilities and Characteristics

"The Seasonal Cycle and Its Relation to Human Characteristics and Abilities, Part I." Cycles. Vol. III, No. 7, pp. 240-241. Sept., 1952. "Part II: Birth Months of Geniuses." Ibid. Vol. IV, No. 10, pp. 336-337. Dec., 1953.
"Long Cycles of Human Characteristics and Abilities." Stephen W. and Netta E. Gray. Cycles. Vol. V, No. 4, pp. 133-135. April, 1954.
". . .Cycle Knowledge of a Buddhist Sage." Dwight H. Bulkley. Cycles. Vol. VII, No. 1, pp. 21-23. Jan., 1956.
"The 36-37 1/2-Hour Cycle in Emotion." Dwight H. Bulkley. Cycles. Vol. VII, No. 3, pp. 77-81. March, 1956.
"The 12 1/2, 37 1/2 and 75-Hour Cycles of Human Reaction." Dwight H. Bulkley. Cycles. Vol. VIII, No. 10, pp. 268-271. Oct., 1957.
"Evidence for a 400-Year Cycle in Human Ability." Stephen W. and Netta E. Gray. Journal of Cycle Research. Vol. 7, No. 2, pp. 43-48. April, 1958.
"Cycles in the Numbers of Eminent Men." Stephen W. and Netta E. Gray. Cycles. Vol. IX, No. 8, pp. 193-194. Aug., 1958.
"Cyclic Variation in Scientific Activity." Erwin W. Fellows. Journal of Cycle Research. Vol. 8, No. 4, pp. 108-120. Oct., 1959.

Insanity, Suicide, and Crime

"Seasonal Patterns of Insanity, Suicide, and Crime." Cycles. Vol. I, No. 3, pp. 16-17. Oct., 1950.

Intellectual Interest

"Seasonal Cycle in Intellectual Interest." Cycles. Vol. I, No. 2, pp. 27-28. Sept., 1950. See also Cycles. Vol. V, No. 7, pp. 248-249. Aug.-Sept., 1954.
"Seasonal Cycle in Intellectual Interest." E. R. Dewey. Cycles. Vol. II, No. 1, pp. 7-9. Jan., 1951.

Marriage

"The 18.2-Year Cycle in the Marriage Rate, 1867-1950." E. R. Dewey. Cycles. Vol. VI, No. 5, p. 152. May, 1955.

Patents

"Two Cycles and Trend in Patents Issued in the U.S.A." E. R. Dewey. Cycles. Vol. IX, No. 12, pp. 317-321. Dec., 1958.

Population

"The 17.2-Year Cycle in U.S.A. Population, 1790-1954." E. R. Dewey. Cycles. Vol. VI, No. 5, pp. 153-155. May, 1955.

Quaker Speaking

"The Seasonal Cycle in Quaker Speaking." G. Shirk. Cycles. Vol. X, No. 11, p. 253. Nov., 1959.

Religion

"The 9-Year Cycle in the New Members of the Presbyterian Church in the U.S.A. (Northern)." E. R. Dewey. Cycles. Vol. I, No. 1, pp. 3-8. June, 1950.
"The 9-Year Cycle in New Members of the Congregational Christian Church, 1857-1950, and the Techniques Used in Its Determination." E. R. Dewey. Cycles. Vol. II, No. 5, pp. 163-165, 181-182. May, 1951.
"The 9-Year Cycle in Presbyterian Church Membership." G. Shirk. Cycles. Vol. IX, No. 10, pp. 261-262. Oct., 1958.
"The Cycle of the World's Great Religions." Arthus Louis Joquel, II. Cycles. Vol. X, No. 4, pp. 82-84. April, 1959.
"Cycles in Religion." Arthus Louis Joquel, II. Cycles. Vol. X, No. 8, p. 178. Aug., 1959.

Strikes

"The 14 2/3-Year Cycle in the Number of Strikes in the United States." E. R. Dewey. Journal of Cycle Research. Vol. 1, No. 5, pp. 150-151. Fall, 1952. See also Cycles. Vol. III, No. 9, pp. 316-317. Nov., 1952.
"The 14 2/3-Year Cycle in the Number of Strikes in the U.S." E. R. Dewey. Cycles. Vol. VI, No. 1, pp. 12-13. Jan., 1955.

Unemployment

"Seasonal Cycle in Unemployment." G. Shirk. Cycles. Vol. IX, No. 7, pp. 155-156. July, 1958.
"Unemployment." Cycles. Vol. X, No. 6, p. 139. June, 1959.

War

"The Trend of International Conflict." E. R. Dewey. Cycles. Vol. II, No. 1, pp. 2-4. Jan., 1951.
"The 57-Year Cycle in International Conflict." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 1, pp. 4-6, 12. Jan., 1951.
"The 22 1/7-Year Cycle in International War." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 2, pp. 43-46, 53-54. Feb., 1951.
"The 11.2-Year Cycle in International War." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. III, No. 4, pp. 135-139, 140-141. April, 1952.
"The 142-Year Cycle in War." E. R. Dewey. Cycles. Vol. III, No. 6, pp. 201-204. June, 1952.
"The 57-Year Cycle in International Conflict." E. R. Dewey. Cycles. Vol. III, No. 6, p. 210. June, 1952.
"The 17 3/4-Year Cycle in War, 599 B.C.-A.D. 1950." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 40-41. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 110-111. April, 1955.
"The 22-Year Cycle in International Conflict, 599 B.C.-A.D. 1950." E. R. Dewey. Cycles. Vol. VII, No. 1, pp. 15-16. Jan., 1956.
"Physical Factors of the Historical Process." A. L. Tchijevsky. Journal of Cycle Research. Vol. 5, No. 4, pp. 89-109. Oct., 1956. See also Foundation Reprint No. 39, in Cycles. Vol. VIII, No. 2, pp. 29-51. Feb., 1957.
"What's Ahead for War?" E. R. Dewey. Cycles. Vol. IX, No. 2, pp. 41-62. Feb., 1958.
"War." Cycles. Vol. X, No. 5, p. 117. May, 1959.

ECONOMICS

Production, Consumption, etc., by Industry

Aluminum

"What's Ahead for Aluminum Production?" E. R. Dewey. Cycles. Vol. IX, No. 3, pp. 83-85. March, 1958.
"The 6.4-Year Cycle in Primary Aluminum Production, U.S.A., 1886-1957." G. Shirk. Journal of Cycle Research. Vol. 7, No. 2, pp. 49-62. April, 1958.
"Aluminum Production." (Chart.) Vol. X, No. 5, p. 115. May, 1959.

Automobile

"Cycles in Automobile Sales, The 6-Year Rhythm, 1893-1949." E. R. Dewey. Cycles. Vol. I, No. 3, pp. 5-9. Oct., 1950.
"The 13-Year Cycle in Automobile Sales." E. R. Dewey. Cycles. Vol. III, No. 8, pp. 271-276. Oct., 1952.
"The 3.4-Year Cycle in Automobile Sales." E. R. Dewey. Cycles. Vol. V, No. 7, pp. 245-247. Aug.-Sept., 1954. Ibid. No. 8, pp. 286-291. Oct., 1954.
"The 36-Month Cycle." Ibid. No. 9, pp. 321-323. Nov., 1954.
"The 23 2/3-Month Cycle." Ibid. No. 10, pp. 347-351. Dec., 1954.
"What's Ahead for the Sales of Automobiles?" E. R. Dewey. Cycles. Vol. IX, No. 1, pp. 5-8. Jan., 1958.
"Automobiles." G. Shirk. Cycles. Vol. IX, No. 11, p. 309. Nov., 1958.

Cheese

"The 4-Year Cycle in the Consumption of Cheese, 1867-1953." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 188-189. June-July, 1955.

Cigarettes

"Cycles in Cigarette Production, The 8-Year Rhythm, 1880-1948." E. R. Dewey. Cycles. Vol. I, No. 3, pp. 18-22. Oct., 1950.
"The 8-Year Cycle in Cigarette Production." E. R. Dewey. Cycles. Vol. III, No. 9, p. 330. Nov., 1952.
"The 8-Year Cycle in Cigarette Production." E. R. Dewey. Cycles. Vol. V, No. 7, pp. 256-259. Aug.-Sept., 1954.
"The 8-Year Cycle in Cigarette Production, 1880-1955." E. R. Dewey. Cycles. Vol. VII, No. 10, pp. 275-277. Oct., 1956.
"Cigarette Consumption." Cycles. Vol. IX, No. 2, p. 70. Feb., 1958.

Construction

"The 33-Month Cycle in Building Construction." E. R. Dewey. Cycles. Vol. II, No. 4, pp. 138-139. April, 1951.
"Cycles in Residential Building Construction, The 18 1/3-Year Cycle." (Together with the techniques regarding its index.) E. R. Dewey. Cycles. Vol. II, No. 5, pp. 171-173, 182. May, 1951.
"The Seasonal Cycle in Residential Building Construction Contracts." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 5, pp. 174,180-181. May, 1951.
"The 18 1/3-Year Cycle in Building Construction." E. R. Dewey. Cycles. Vol. II, No. 6, pp. 225-227. June, 1951.
"The 33-Month Cycle in Residential Building Construction." E. R. Dewey. Cycles. Vol. III, No. 6, p. 211. June, 1952.
"The 33-Month Cycle in Building Construction." E. R. Dewey. Cycles. Vol. V, No. 4, pp. 137-138. April, 1954.
"The 33-Month Cycle in Building Construction." E. R. Dewey. Cycles. Vol. VI, No. 5, pp. 156-158. May, 1955.
"The 33-Month Cycle in Residential Building Construction." E. R. Dewey. Cycles. Vol. VII, No. 8, p. 228. Aug., 1956.
"What's Ahead for Residential Building Construction?" E. R. Dewey. Cycles. Vol. VIII, No. 11, pp. 283-294. Nov., 1957.
"Residential Building." Cycles. Vol. X, No. 10, p. 235. Oct., 1959.

Cotton

"The 6-Year Cycle in Cotton Production." E. R. Dewey. Cycles. Vol. IV, No. 1, pp. 9-13. Jan., 1953.
"What's Ahead for Cotton Consumption?" G. Shirk. Cycles. Vol. X, No. 5, pp. 101-103. May, 1959.
"Cotton Consumption." (Chart.) Cycles. Vol. X, No. 12, p. 280. Dec., 1959.

Iron, Pig

"The 11.2-Year Cycle in Pig Iron Production." G. Shirk. Cycles. Vol. X, No. 3, pp. 57-59. March, 1959.

Manufacturing

"Manufacturing Production (Physical Production--1810-1953)." E. R. Dewey.
"Part I: Trend." Cycles. Vol. IV, No. 9, pp. 296-300. Nov., 1953.
"Part II: The 54-Year Cycle." Ibid. pp. 300-302.
"Part III: The 11.2-Year Cycle." Ibid. pp. 302-306.
"Part IV: The 9.3-Year Cycle." Ibid. No. 10, pp. 333-334. Dec., 1953.
"Part V: The 13.0-Year Cycle." Ibid. p. 335.
"Basic Structure." Ibid. Vol. V, No. 1, pp. 5-7. Jan., 1954. Ibid. No. 2, pp. 45-53. Feb., 1954.
"Trend." Ibid. No. 4, pp. 126-131. April, 1954.
"What's Ahead for Manufacturing Production? A Long Term View." E. R. Dewey. Cycles. Vol. IX, No. 5 & 6, pp. 113-117. May-June, 1958.
"What's Ahead for Manufacturing Production? A Short Term View." G. Shirk. Cycles. Vol. X, No. 1, pp. 5-7. Jan., 1959.
"Recent Trends in Industrial Production." E. R. Dewey. Cycles. Vol. X, No. 6, pp. 125-127. June, 1959.
"Manufacturing Production." (Chart.) Cycles. Vol. X, No. 9, p. 211. Sept., 1959.

Rayon

"Viscose Rayon Filament Yarn Production, The 2-Year Rhythm, the 2 3/4-Year Rhythm, the 3 1/2-Year Rhythm, the 6-Year Rhythm, and the Trend, 1911-1948." E. R. Dewey. Foundation Report No. 1. 57 pp. 1949. See also Journal of Cycle Research. Vol. 2, No. 1, pp. 3-20. Winter, 1952-1953. See also Cycles. Vol. IV, No. 2, pp. 43-60. Feb., 1953.
"A Forecast of Viscose Rayon Filament Yarn Production." E. R. Dewey. Cycles. Vol. IV, No. 2, pp. 61-62. Feb., 1953.
"A 1949 Forecast of Rayon Production." E. R. Dewey. Cycles. Vol. VI, No. 7, pp. 217-220. Aug.-Sept., 1955.

Seed, Grass

"The 3.9-Year Cycle in Grass Seed Production." G. Shirk. Cycles. Vol. X, No. 11, pp. 249. Nov., 1959.

Steel

"The 6-Year Cycle in Steel Production, 1867-1954." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 169-174. June-July, 1955.
"Steel Production." Cycles. Vol. X, No. 7, p. 165. July, 1959.

Textiles

"The 2-Year Cycle in Textiles." G. Shirk. Cycles. Vol. X, No. 7, pp. 155-158. July, 1959.

Production, Sales, by Company

Allis Chalmers

"The 6-Year Cycle in Allis Chalmers Sales." E. R. Dewey. Cycles. Vol. VI, No. 3, pp. 94-95. March, 1955.

American Viscose

"The 6-Year Cycle in American Viscose Shipments." E. R. Dewey. Cycles. Vol. IV, No. 1, p. 24. Jan., 1953.

Armco Steel

"The 6-Year Cycle in Armco Steel." E. R. Dewey. Cycles. Vol. IV. No. 4, pp. 115-116. April, 1953.

Armour

"The 6-Year Cycle in Armour Sales." E. R. Dewey. Cycles. Vol. IV, No. 1, pp. 24-25. Jan., 1953.

Bethlehem Steel

"Bethlehem Steel Corporation, 6-Year Cycle in Production." E. R. Dewey. Cycles. Vol. IV, No. 7, pp. 215-218. Sept., 1953.

Canadian Pacific Railway

"The 9.18-Month Cycle in the Ton-Miles of the Canadian Pacific Railway." E. R. Dewey. Cycles. Vol. II, No. 6, pp. 208-218. June, 1951.
"Cycles in Canadian Pacific Railway Freight Traffic." C. Meredith Rountree. Journal of Cycle Research. Vol. 1, No. 1, pp. 6-19. Autumn, 1951.
"Cycles in Canadian Pacific Railway Ton Miles." E. R. Dewey. Journal of Cycle Research. Vol. 7, No. 4, pp. 95-115. Oct., 1958.
"The 7 1/2-Year Cycle in the Ton Miles of the Canadian Pacific Railway." E. R. Dewey. Cycles. Vol. X, No. 2, pp. 32-33. Feb., 1959.

Company "G"

"The 22.7-Month Cycle in the Sales of Company G." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 1, pp. 10-11, 13. Jan., 1951.
"The 33-Month Cycle in the Sales of Company G." E. R. Dewey. Cycles. Vol. II, No. 2, pp. 49-52. Feb., 1951.
"Cycles in the Sales of Company G." E. R. Dewey. Cycles. Vol. II, No. 4, pp. 130-134. April, 1951.
"The 12.6-Month Cycle in the Sales of Company G." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. III, No. 3, pp. 94-96, 99-109. March, 1952.
"The 33-Month Cycle in the Sales of Company G." E. R. Dewey. Cycles. Vol. III, No. 7, pp. 242-243. Sept., 1952.

Continental Oil

"Continental Oil Company--Cycles, Trend, and Forecast." E. R. Dewey. Cycles. Vol. V, No. 6, pp. 227-232. June-July, 1954.
"Cycles in Continental Oil Company Income." E. R. Dewey. Cycles. Vol. VI, No. 8, pp. 249-252. Oct., 1955.

Du Pont

"The 6-Year Cycle in du Pont." E. R. Dewey. Cycles. Vol. V, No. 5, pp. 186-187. May, 1954.
"Cycles in the Sales of du Pont." E. R. Dewey. Cycles. Vol. V, No. 6, pp. 205-214. June-July, 1954.

General Electric

"Cycles in Industrial Production: General Electric Company, The 6-Year Rhythm in Orders Received, 1893-1946." E. R. Dewey. Foundation Report No. 3. 18 pp. 1949.
"The 6-Year Rhythm in Orders Received by the General Electric Company, 1893-1946." E. R. Dewey. Cycles. Vol. I, No. 2, pp. 3-8. Sept., 1950.
"The 6-Year and 8 1/2-Year Cycles in General Electric Sales." E. R. Dewey. Cycles. Vol. VI, No. 7, pp. 201-208. Aug.-Sept., 1955.

General Motors

"The 6-Year Cycle in General Motors Sales." E. R. Dewey. Cycles. Vol. VI, No. 8, pp. 236-238. Oct., 1955.
"A Cycle Analysis of General Motors Sales." Vedder Hughey. Cycles. Vol. VII, No. 3, pp. 59-65. March, 1956.

Goodyear Tire and Rubber

"The 8-Year and 6-Year Cycles in Goodyear Tire and Rubber Company Sales." E. R. Dewey. Cycles. Vol. V, No. 1, pp. 8-12. Jan., 1954.
"The 8-Year and 6-Year Cycles in Goodyear Tire and Rubber Company Sales." E. R. Dewey. Cycles. Vol. V, No. 5, pp. 184-185. May, 1954.
"The 8-Year Cycle in Goodyear Tire and Rubber Company, 1926-1955." E. R. Dewey. Cycles. Vol. VII, No. 10, pp. 278-279. Oct., 1956.
"Goodyear." Cycles. Vol. IX, No. 4, pp. 102-103. April, 1958.

Jones and Laughlin

"The 6-Year Cycle in Jones and Laughlin." E. R. Dewey. Cycles. Vol. III, No. 10, pp. 344-345. Dec., 1952.

Monsanto Chemical

"The 6-Year Cycle in Monsanto Chemical." E. R. Dewey. Cycles. Vol. V, No. 10, pp. 356-358. Dec., 1954.

Montgomery Ward

"The 6-Year Cycle in Montgomery Ward and Company Sales." E. R. Dewey. Cycles. Vol. VI, No. 2, pp. 54-55. Feb., 1955.

National Lead

"The 6-Year Cycle in National Lead." E. R. Dewey. Cycles. Vol. V, No. 10, pp. 358-360. Dec., 1954.

Pittsburgh Plate Glass

"The 6-Year Cycle in Pittsburgh Plate Glass Company Sales." E. R. Dewey. Cycles. Vol. V, No. 1, pp. 13-16. Jan., 1954.

Procter and Gamble

"The 6-Year Cycle in Procter and Gamble Sales." E. R. Dewey. Cycles. Vol. IV, No. 9, pp. 307-308. Nov., 1953.

Sears, Roebuck

"The 6-Year Cycle in Sears, Roebuck." E. R. Dewey. Cycles. Vol. V, No. 5, pp. 180-182. May, 1954.

Standard Oil of California

"The 6-Year Cycle in Standard Oil of California." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 190-191. June-July, 1955.

Swift

"The 6-Year Cycle in Swift and Company Sales." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 192-193. June-July, 1955.

Wilson

"The 6-Year Cycle in Wilson and Company Sales." E. R. Dewey. Cycles. Vol. IV, No. 6, pp. 191-192. June-July, 1953.

Youngstown Sheet and Tube

"The 6-Year Cycle in Youngstown Sheet and Tube Company Sales." E. R. Dewey. Cycles. Vol. VI, No. 2, pp. 52-53. Feb., 1955.

Prices of Commodities

General

"What's Ahead for Commodity Prices?" E. R. Dewey. Cycles. Vol. VIII, No. 11, p. 295. Nov., 1957.

Coffee

"The 16- or 16 2/3-Year Cycle in Coffee Prices, 1854-1954." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 180-183. June-July, 1955.

Copper

"The 9.3- and 8.6-Year Cycles in Copper Prices." E. R. Dewey. Journal of Cycle Research. Vol. 3, No. 4, pp. 99-107. Fall, 1954.

"The 9.3- and 8.6-Year Cycles in Copper Prices." E. R. Dewey. Cycles. Vol. V, No. 10, p. 352. Dec., 1954.
"The 9.3- and 8.6-Year Cycles in Copper Prices." E. R. Dewey. Cycles. Vol. VII, No. 9, pp. 241-249. Sept., 1956.
"A Projection of Five Cycles in Copper Prices." E. R. Dewey. Cycles. Vol. VII, No. 11, pp. 307-308. Nov., 1956.
"A Projection of Five Cycles in Copper Prices." E. R. Dewey. Cycles. Vol. VIII, No. 8, pp. 214-215. Aug., 1957.
"Long Term Trend of Copper Prices." E. R. Dewey. Cycles. Vol. VIII, No. 9, p. 238. Sept., 1957.
"The 54-Year Cycle in Copper Prices." E. R. Dewey. Cycles. Vol. VIII, No. 9, p. 239. Sept., 1957.
"Copper Prices." Cycles. Vol. X, No. 12, p. 279. Dec., 1959.

Corn

"The 5 1/2-Year Cycle in Corn Prices." E. R. Dewey. Cycles. Vol. VI, No. 2, pp. 43-47. Feb., 1955. Ibid. No. 3, pp. 77-81. March, 1955.
"The 3 1/2- to 3 3/4-Year Cycles in Corn Prices, 1720-1954." E. R. Dewey. Cycles. Vol. VI, No. 8, pp. 239-248. Oct., 1955.
"The 3.49-Year Cycle in Corn Prices." E. R. Dewey. Cycles. Vol. VI, No. 9, pp. 273-280. Nov., 1955.
"What's Ahead for Corn Prices." E. R. Dewey. Cycles. Vol. VIII, No. 6, pp. 149-158. June, 1957.
"Corn Prices." G. Shirk. Cycles. Vol. IX, No. 8, pp. 202-204. Aug., 1958.
"Corn Prices." (Chart.) Cycles. Vol. X, No. 11, p. 260. Nov., 1959.

Cotton

"War Cycles and the 6-Year Cycle in Cotton Prices, 1731-1949." E. R. Dewey. Foundation Report No. 2. 19 pp. 1949. See also Journal of Cycle Research. Vol. 1, No. 2, pp. 35-42. Winter, 1951-1952.
"The 5.91-Year Cycle in Cotton Prices." E. R. Dewey. Cycles. Vol. V, No. 8, pp. 277-283. Oct., 1954.
"The 17 3/4-Year Cycle in Cotton Prices, 1731-2--1953-4." E. R. Dewey. Cycles. Vol. VI, No. 1, pp. 14-17. Jan., 1955.
"The 17 3/4-Year Cycle in Cotton Prices, 1731-2--1953-4." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 44-45. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 114-115. April, 1955.
"The 5.91-Year Cycle in Cotton Prices." G. Shirk. Cycles. Vol. X, No. 2, pp. 29-30. Feb., 1959.
"Cotton Prices." (Chart.) Cycles. Vol. X, No. 11, p. 257. Nov., 1959.

Egg

"What's Ahead for Egg Prices?" G. Shirk. Cycles. Vol. IX, No. 4, pp. 86-87. April, 1958.
"Egg Prices." Cycles. Vol. X, No. 10, pp. 236-237. Oct., 1959.

Hog

"What's Ahead for Hog Prices? A Short Term View." G. Shirk. Cycles. Vol. X, No. 10, pp. 221-227. Oct., 1959.
"Hog Prices." (Chart.) Cycles. Vol. X, No. 11, p. 258. Nov., 1959

Iron, Pig

"Cycles in Pig Iron Prices, Samuel Benner's Forecast of 1875." E. R. Dewey. Cycles. Vol. III, No. 2, pp. 50-52. Feb., 1952.
"What Made the Benner Forecast Tick?" E. R. Dewey. Cycles. Vol. III, No. 3, pp. 90-93. March, 1952.
"The 17 3/4-Year Cycle in Pig Iron Prices, 1784-1951." E. R. Dewey. Journal of Cycle Research. Vol. 1, No. 3, pp. 76-86. Spring, 1952.
"The 17 3/4-Year Cycle in Pig Iron Prices, 1784-1951." E. R. Dewey. Cycles. Vol. III, No. 5, pp. 162-165. May, 1952.
"Possible Cycles in Pig Iron Prices, 1784-1851." E. R. Dewey. Cycles. Vol. III, No. 6, pp. 207-209. June, 1952.
"An Old Study of Pig Iron Prices." E. R. Dewey. Cycles. Vol. III, No. 8, p. 277. Oct., 1952.
"The 9.2- and 8.5-Year Cycles in Pig Iron Prices." E. R. Dewey. Journal of Cycle Research. Vol. 2, No. 4, pp. 79-89. Fall, 1953.
"The 9.2- and 8.5-Year Cycles in Pig Iron Prices." E. R. Dewey. Cycles. Vol. V, No. 3, pp. 86-95. March, 1954.
"The 17 3/4-Year Cycle in Pig Iron Prices, 1784-1954." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 51-53. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 121-123. April, 1955.
"1956 Postscript, Samuel Benner's Forecast of 1875." E. R. Dewey. Cycles. Vol. VII, No. 7, pp. 208-210. July, 1956.

Iron, Wrought

"The 16 2/3-Year Cycle in Wrought Iron Prices in England, 1277-1918." E. R. Dewey. Cycles. Vol. VI, No. 5, pp. 141-147. May, 1955.

Oats

"What's Ahead for Oats Prices?" G. Shirk. Cycles. Vol. IX, No. 9, pp. 217-220. Sept., 1958.
"Oats Prices." (Chart.) Cycles. Vol. X, No. 12, p. 280. Dec., 1959.

Pepper

"The 15 1/7-Year Cycle in Black Pepper Prices, 1819-1953." E. R. Dewey. Cycles. Vol. VI, No. 6, pp. 184-185. June-July, 1955.

Pipe Fittings

"Cycles in the Prices of Malleable Iron Pipe Fittings." (Together with the techniques used in their determination.)

E. R. Dewey. Cycles. Vol. II, No. 10, pp. 362-366, 378-379. Dec., 1951.
"Cycles in the Prices of Malleable Iron Pipe Fittings." E. R. Dewey. Cycles. Vol. IV, No. 1, p. 34. Jan., 1953.

Rye

"Rye Prices." G. Shirk. Cycles. Vol. X, No. 8, p. 177. Aug., 1959.

Wheat

"The 9.3-Year Cycle in Wheat Prices." E. R. Dewey. Cycles. Vol. IV, No. 5, pp. 139-141. May, 1953.
"What's Ahead for Wheat Prices?" E. R. Dewey. Cycles. Vol. IV, No. 6, pp. 182-188. June-July, 1953. Ibid. No. 7, pp. 222-227. Sept., 1953.
"What's Ahead for Wheat Prices?" E. R. Dewey. Cycles. Vol. VIII, No. 9, pp. 229-236. Sept., 1957.
"Wheat Prices." (Chart.) Cycles. Vol. X, No. 11, p. 260. Nov., 1959.

Wholesale

"Cycles in Economic Data: A Digest, Wholesale Commodity Prices, Agricultural Commodities." Erwin T. Hadorn. Cycle Digest. 23 pp. 1949.
"Wholesale Price Cycles, The 22-Year Cycle in Wholesale Prices." Cycles. Vol. I, No. 2, p. 18. Sept., 1950.

Prices of Securities

Consols

"Cycles in Consols." E. Hugh McDougall. Cycles. Vol. X, No. 1, pp. 11-14. Jan., 1959.
"An Idea About the 54-Year Cycle." J. F. Danson. Cycles. Vol. X, No. 11, p. 252. Nov., 1959.

Ordinary Shares

"Cycles in Ordinary Shares." E. H. McDougall. Cycles. Vol. X, No. 3, pp. 60-62. March, 1959.

Stocks

Combined Stocks

"The 41-Month Rhythm in Common Stocks." E. R. Dewey. Cycles. Vol. I, No. 2, pp. 11-14. Sept., 1950.
"Cycles in the Stock Market." E. R. Dewey. Cycles. Vol. II, No. 3, pp. 83-88. March, 1951.
"Cycles in the Stock Market." E. R. Dewey. Cycles. Vol. II, No. 5, p. 178. May, 1951.
"Cycles in the Stock Market, A Preliminary Projection to 1990." E. R. Dewey. Cycles. Vol. II, No. 6, pp. 219-222. June, 1951.
"The Synthesis of Long Cycles in Stock Prices." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 7, pp. 245-252, 261-263. Sept., 1951.
"The 45 6/7-Day Cycle in a Common Stock." E. R. Dewey. Cycles. Vol. IV, No. 6, pp. 178-181. June-July, 1953.
"The 46-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. V, No. 4, p. 136. April, 1954.
"The Long Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. VI, No. 1, pp. 10-11. Jan., 1955.
"The 17 3/4-Year Cycle in Stock Prices, 1831-1954." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 55-57. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 125-127. April, 1955.
"The 17.2-Year Cycle in Stock Prices, 1831-1954." E. R. Dewey. Cycles. Vol. VI, No. 5, pp. 149-151. May, 1955.
"The 9.18-Year Cycle in Common Stock Prices." E. R. Dewey. Cycles. Vol. VII, No. 6, pp. 157-166. June, 1956. Ibid. No. 7, pp. 185-187. July, 1956.
"The 8 1/2-Year Cycle in Common Stock Prices." E. R. Dewey. Cycles. Vol. VII, No. 9, p. 250. Sept., 1956.
"The 8.17-Year Cycle in Common Stock Prices." E. R. Dewey. Cycles. Vol. VII, No. 10, pp. 265-267. Oct., 1956.
"Stock Market Trend." E. R. Dewey. Cycles. Vol. VII, No. 12, pp. 325-327. Dec., 1956.
"Trend and Cycles in Stock Prices." E. R. Dewey. Cycles. Vol. VIII, No. 1, pp. 5-12. Jan., 1957.
"The 5.91- or 5.92-Year Cycles in Stock Prices." E. R. Dewey. Cycles. Vol. VIII, No. 4, pp. 93-98. April, 1957.
"The 22-Year Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. VIII, No. 12, pp. 309-312. Dec., 1957.
"A Projection to 1990 of 11 Stock Price Cycles and the Underlying Growth Trend." E. R. Dewey. Cycles. Vol. IX, No. 4, pp. 83-85. April, 1958.
"Short Stock Market Cycles." George B. Seager. Cycles. Vol. IX, No. 4, p. 91. April, 1958.
"The 7-Year Cycle in Stock Prices." G. Shirk. Cycles. Vol. IX, No. 8, pp. 187-190. Aug., 1958.
"Stock Market vs. Manufacturing Production." E. R. Dewey. Cycles. Vol. IX, No. 8, pp. 191-192. Aug., 1958.
"The 17.75-Year Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. X, No. 3, pp. 53-55. March, 1959.
"What's Ahead for Stock Prices?" E. R. Dewey. Cycles. Vol. X, No. 4, pp. 77-79. April, 1959.
"The Stock Market Projection: Audit of the 11-Year Cycle." G. Shirk. Cycles. Vol. X, No. 8, pp. 173-175. Aug., 1959.
"Stock Market Trend." E. R. Dewey. Cycles. Vol. X, No. 8, pp. 182-183. Aug., 1959.
"Stock Prices." (Chart.) Cycles. Vol. X, No. 12, p. 278. Dec., 1959.

Industrial Stocks

"The 9.2-Year Cycle in Common Stocks." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 6, pp. 204-207, 233. June, 1951.
"Stock Market Cycles by 'Predix.'" E. R. Dewey. Cycles. Vol. II, No. 8, pp. 283-284. Oct., 1951.
"Marechal's Stock Market Forecast of 1933." E. R. Dewey. Cycles. Vol. II, No. 8, pp. 285-286. Oct., 1951.
"The 41-Month Cycle in Industrial Common Stock Prices." (Together with the techniques used in its determination.)

E. R. Dewey. Cycles. Vol. II, No. 9, pp. 327-335, 345. Nov., 1951. Ibid. No. 12, pp. 371-377. Dec., 1951.
"The 8-Year Cycle in Industrial Common Stocks." E. R. Dewey. Cycles. Vol. III, No. 1, pp. 5-8. Jan., 1952.
"Possible Cycles in Industrial Stock Prices, 1871-1950." E. R. Dewey. Cycles. Vol. III, No. 5, pp. 166-179. May, 1952.
"Is There a 17 1/3-Year Pattern in Stocks?" E. R. Dewey. Cycles. Vol. III, No. 6, pp. 205-206. June, 1952.
"The Three Year Cycle in Industrial Common Stock Prices." Alexander Malinowski. Cycles. Vol. III, No. 7, pp. 233-235. Sept., 1952.
"Will Dunbar's Cycle Stand Up?" E. R. Dewey. Cycles. Vol. III, No. 8, pp. 267-270. Oct., 1952.
"More About the 46-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. III, No. 9, pp. 297-299. Nov., 1952.
"The 6.41-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. IV, No. 7, p. 228. Sept., 1953.
"Predix Industrial Common Stock Analysis." E. R. Dewey. Cycles. Vol. IV, No. 7, p. 229. Sept., 1953.
"The 6.33-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. IV, No. 10, p. 342. Dec., 1953.
"Three Minor Stock Market Cycles." E. R. Dewey. Cycles. Vol. V, No. 2, pp. 54-55. Feb., 1954.
"The 41-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. V, No. 5, pp. 176-179. May, 1954.
"The 46-Month Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. VII, No. 8, pp. 221-227. Aug., 1956.
"A Correction." Veryl Dunbar. Cycles. Vol. VII, No. 11, p. 315. Nov., 1956.
"The 17-Week Cycle in Industrial Stock Prices." G. Shirk. Cycles. Vol. IX, No. 7, pp. 149-154. July, 1958. Ibid. No. 10, pp. 263-265. Oct., 1958.
"The 9.25-Year Cycle in the Dow-Jones Industrial Average." John Harvey. Cycles. Vol. IX, No. 11, pp. 298-299. Nov., 1958.
"Dunbar's 46-Month Stock Price Cycle." G. Shirk. Cycles. Vol. X, No. 6, pp. 130-131. June, 1959.
"The 17-Week Cycle in Industrial Stocks." E. R. Dewey. Cycles. Vol. X, No. 11, pp. 247-248. Nov., 1959.

Railroad Stocks

"The 19.4-Year Cycle in Railroad Stock Prices." (Together with the techniques involved in its determination.) E. R. Dewey. Cycles. Vol. II, No. 7, pp. 255-260, 263. Sept., 1951.
"Possible Cycles in Railroad Stock Prices, 1831-1950." (Together with the techniques used in the construction of the periodogram of railroad stock prices.) E. R. Dewey. Cycles. Vol. III, No. 4, pp. 123-129, 140. April, 1952.
"A Stock Market Forecast Made in 1912." E. R. Dewey. Cycles. Vol. III, No. 6, pp. 197-200. June, 1952.
"The 9.18-Year Cycle in Railroad Stock Prices, 1831-1955, and the Techniques Used in Its Definitization." E. R. Dewey. Journal of Cycle Research. Vol. 5, No. 3, pp. 63-84. July, 1956.
"The 7.94 and 8.39-Year Cycles in Railroad Stock Prices, 1831-1955." E. R. Dewey. Cycles. Vol. VII, No. 11, pp. 289-294. Nov., 1956.
"The 5.92-Year Cycle in Railroad Stock Prices, 1831-1956, and the Techniques Used in Its Definitization." E. R. Dewey. Journal of Cycle Research. Vol. 6, No. 1, pp. 16-31. Jan., 1957.
"The 5.91- or 5.92-Year Cycle in Stock Prices." E. R. Dewey. Cycles. Vol. VIII, No. 4, pp. 93-98. April, 1957.
"The 7-Year Cycle in R. R. Stock Prices." G. Shirk. Cycles. Vol. IX, No. 11, pp. 285-287. Nov., 1958.

Financial

General

"Cycles in Financial Data." Hugh P. King. Journal of Cycle Research. Vol. 7, No. 1, pp. 3-40. Jan., 1958.

Bond Yields

"What's Ahead for Interest Rates?" E. R. Dewey. Cycles. Vol. VIII, No. 10, pp. 253-256. Oct., 1957.
"Bond Yields." (Chart.) Cycles. Vol. X, No. 9, p. 210. Sept., 1959.

Liabilities of Failures

"An Economic Cycle, The 17 2/3-Year Rhythm in Liabilities of Commercial and Industrial Failures in the U.S., 1857-1950." E. R. Dewey. Journal of Cycle Research. Vol. 1, No. 1, pp. 2-5. Autumn, 1951.
"Business Failures, Liabilities of Commercial and Industrial Failures in the United States, 1857-1953, Cycles, Trend, and Forecast." E. R. Dewey. Cycles. Vol. IV, No. 8, pp. 255-272. Oct., 1953.
"The 17 2/3-Year Cycle in Failures, 1857-1954." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 42-43. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 112-113. April, 1955.
"Trend and Cycles of Business Failures." E. R. Dewey. Cycles. Vol. VIII, No. 5, pp. 121-139. May, 1957.
"Liabilities of Failures." (Chart.) Cycles. Vol. X, No. 8, p. 185. Aug., 1959.

Miscellaneous Economic

Advertising Efficiency

"The 22-Year Cycle in Advertising Efficiency of the Lydia E. Pinkham Medicine Company." (Together with the details of the construction of the index involved.) E. R. Dewey. Cycles. Vol. II, No. 6, pp. 223-224, 234. June, 1951.

Airplane Traffic

"The 5 1/2-Year Cycle in Airplane Traffic, U.S.A., 1930-1955." E. R. Dewey. Cycles. Vol. VII, No. 12, pp. 334-335. Dec., 1956.

Business, General

Cycles in General Business, The 3- to 3 1/2-Year Waves, 1790-1946." E. R. Dewey. Cycles. Vol. I, No. 4, pp. 4-14.

Nov., 1950
"The 3 1/2-Year Cycle in General Business." E. R. Dewey. Cycles. Vol. VI, No. 9, pp. 261-266. Nov., 1955.
"Long Term Growth Trends in the American Economy." E. R. Dewey. Cycles. Vol. VIII, No. 6, pp. 160-163. June, 1957. Ibid. No. 7, pp. 185-191. July, 1957. Ibid. No. 8, pp. 201-206. Aug., 1957. Ibid. No. 9, pp. 240-243. Sept., 1957. Ibid. No. 12, pp. 318-322. Dec., 1957. Ibid. Vol. IX, No. 3, pp. 88-90. March, 1958.
"Business Cycle Forecasting." David Williams. Journal of Cycle Research. Vol. 8, No. 2, pp. 39-63. April, 1959.

Cattle on Farms

"The 9-Year Cycle in the Number of Cattle on Farms, 1867-1954." E. R. Dewey. Cycles. Vol. VI, No. 7, pp. 213-216. Aug.-Sept., 1955.

Crop Yields

"An 11-Year Cycle in Crop Yields." E. R. Dewey. Cycles. Vol. IX, No. 4, p. 90. April, 1958.

Petroleum Inventories

"Seasonal Influences in Petroleum Inventories." D. M. Himmelblau. Cycles. Vol. X, No. 4, pp. 84-85. April, 1959.

Real Estate

"The 18.2-Year Cycle in Real Estate Activity, 1851-1954." E. R. Dewey. Journal of Cycle Research. Vol. 4, No. 2, pp. 38-39. April, 1955. See also Cycles. Vol. VI, No. 4, pp. 108-109. April, 1955.
"The 18 1/3-Year Cycle in Real Estate Activity." G. Shirk. Cycles. Vol. X, No. 2, p. 31. Feb., 1959.

Trade

"The 11-Year Cycle Discovered by Dr. Hyde Clark in 1847." E. R. Dewey. Cycles. Vol. VIII, No. 1, pp. 13-15. Jan., 1957.

Wheat Acreage

"The 9.6-Year Cycle in the Acreage of Wheat." (Together with the techniques used in its determination.) E. R. Dewey. Cycles. Vol. II, No. 5, pp. 175-177, 182. May, 1951.
"The 9.6-Year Cycle in the Acreage of Wheat." E. R. Dewey. Cycles. Vol. III, No. 9, pp. 327-329. Nov., 1952.
"The 9.6-Year Cycle in the Acreage of Wheat." E. R. Dewey. Cycles. Vol. V, No. 9, p. 320. Nov., 1954.
"The 9.6-Year Cycle in the Acreage of Wheat." E. R. Dewey. Cycles. Vol. VI, No. 2, pp. 50-51. Feb., 1955.

FOUNDATION REPRINTS

Numbered Reprints

No. 1. "Cycles." W. J. Hamilton, Jr. Reprinted from American Mammals. McGraw-Hill Company, New York, 1938. 16 pp. 1943.
No. 2. "Cycles: Lynx and Fish, Mice and Men--and Dollars," and "Cycles as an Aid to Postwar Planning." E. R. Dewey. Reprinted from General Electric Review. Vol. 46, No. 5. May, 1943. 6 pp. 1944.
No. 3. "Emotional Cycles in Man." Rex B. Hersey. Reprinted from the Journal of Mental Science. Jan., 1931. 19 pp. 1944, 1946. See also Cycles. Vol. V, No. 9, pp. 325-339. Nov., 1954.
No. 4. "Cycles." Willford I. King. Reprinted from The Causes of Economic Fluctuations. The Ronald Press Company, New York, 1938. 24 pp. 1944.
No. 5. "The Prediction of Tides." Paul C. Whitney. Reprinted from the United States Naval Institute Proceedings. Vol. 66, No. 12, Dec., 1940. 5 pp. 1944.
No. 6. "Matamek Conference on Biological Cycles." A report by Ellsworth Huntington. 1932. 16 pp. 1944.
No. 7. "Cycles in History." Edwin Franden Dakin. Reprinted from Today and Destiny. Alfred A. Knopf, New York, 1940. 15 pp. 1944, 1948.
No. 8. "The Long Waves in Economic Life." N. D. Kondratieff. Reprinted from The Review of Economic Statistics. Vol. XVII, No. 6, Nov., 1935. 11 pp. 1944. See also Cycles. Vol. IV, No. 10, pp. 349-360. Dec., 1953.
No. 9. "Periodic Inspiration in Poetry and Music." J. H. Douglas Webster. Reprinted from The Poetry Review. London. Vol. XXXIV, No. 3. 4 pp. 1945, 1950. See also Cycles. Vol. III, No. 7, pp. 253-258. Sept., 1952. Ibid. Vol. IX, No. 3, pp. 91-96. March, 1958.
No. 10. "Solar and Economic Relationships." Carlos Garcia-Mata and Fleix Shaffner. Reprinted from The Quarterly Journal of Economics. Vol. XLIX, Nov., 1934. 51 pp. 1945, 1949. See also Cycles. Vol. IX, No. 9, pp. 221-239. Sept., 1958.
No. 11. "Putting Cycles to Work in Science and Industry." E. R. Dewey. 24 pp. 1941, 1945.
No. 12. "Testing Cycles for Statistical Significance." Charles E. Armstrong. 13 pp. 1945. See also Journal of Cycle Research. Vol. 1, No. 3, pp. 87-92. Spring, 1952.
No. 13. "Detection and Isolation of Rhythms--An Outline." E. R. Dewey. 5 pp. 1946.
No. 14. "Cycles, Rhythms and Periodicities." Ellsworth Huntington. Reprinted from Mainsprings of Civilization. John Wiley & Sons, Inc., New York, 1945, 24 pp. 1945.
No. 15. "Two Intriguing Cycles." Ellsworth Huntington. Reprinted from Mainsprings of Civilization. John Wiley & Sons, Inc., New York, 1945. 31 pp. 1946.
No. 16. "Broader Aspects of Environmental Cycles." Ellsworth Huntington. Reprinted from Mainsprings of Civilization. John Wiley & Sons, Inc., 21 pp. 1946.
No. 17. "The Sun Makes the Weather--1. Measuring Solar Variation." C. G. Abbot. Reprinted from The Scientific

Monthly. March, 1946. 10 pp. 1946.
No. 18. "The Sun Makes the Weather--2. Weather Effects of Solar Variation." C. G. Abbot. Reprinted from The Scientific Monthly. April, 1946. 8 pp. 1946.
No. 19. "A Representation of the Sunspot Cycle." C. N. Anderson. Reprinted from the Bell System Technical Journal. Vol. XVIII, April, 1939. 8 pp. 1947.
No. 20. "A Statistical Study of the Records of Salmon Fishing on the Restigouche River." Earle B. Phelps and David L. Belding. Privately printed. 37 pp. 1947.
No. 21. "Life and Habits of Field Mice." W. J. Hamilton, Jr. Reprinted from The Scientific Monthly. Vol. L, May, 1940. 10 pp. 1947.
No. 22. "Sunspots and Abundance of Animals." D. A. MacLulich. Reprinted from the Journal of the Royal Astronomical Society of Canada. July-Aug., 1936. 18 pp. 1947.
No. 23. "Tree Rings and Climate Through the Centuries." W. A. Harwood. Reprinted from Weather. Vol. II, No. 4, April, 1947. 13 pp. 1947.
No. 24. "Benner's Prophecies of Future Ups and Downs in Prices." Samuel Benner. 1876. 31 pp. 1948. See also Cycles. Vol. III, No. 2, pp. 59-77. Feb., 1952. Ibid. Vol. V, No. 2, pp. 57-75. Feb., 1954. Ibid. Vol. VII, No. 7, pp. 189-207. July, 1956. See also Journal of Cycle Research. Vol. 8, No. 1, pp. 3-35. Jan., 1959.
No. 25. "The Sun's Short Regular Variation and Its Large Effect on Terrestrial Temperatures." C. G. Abbot. Reprinted from Smithsonian Miscellaneous Collections. Vol. CVII, No. 4, April 4, 1947. 33 pp. 1948.
No. 26. "Cycles in Sedimentary Rock Deposits." Wilmot H. Bradley. Reprinted from Professional Paper 158-E, The Varves and Climate of the Green River Epoch. 1929. 8 pp. 1948.
No. 27. "Fluctuations in Numbers of Birds in the Toronto Region." J. Murray Speirs. Reprinted from The Auk. Vol. 56, Oct., 1939. 13 pp. 1948. See also Cycles. Vol. IX, No. 5 & 6, pp. 123-139. May-June, 1958.
No. 28. "Recurring Cycles of Fashion." (Excerpts.) Agnes Brooks Young. Harper and Brothers, New York and London, 1937. 15 pp. 1948.
No. 29. "Variable Stars." William T. Skilling and Robert S. Richardson. Reprinted from Astronomy. Henry Holt & Company, Inc., 1939, 1947. 7 pp. 1949. See also Cycles. Vol. IX, No. 4, pp. 88-90. April, 1958.
No. 30. "Rhythms in Nature, Daily, Lunar, Annual, and Sunspot Cycles, and Periodic Migration." A. S. Pearse. Reprinted from Animal Ecology. McGraw-Hill Book Co., Inc., 1939. 25 pp. 1949.
No. 31. "Excerpts from Season of Birth, Its Relation to Human Abilities." Ellsworth Huntington. John Wiley & Sons, Inc., 1938. 18 pp. 1949. See also Cycles. Vol. IX, No. 7, pp. 159-165. July, 1958.
No. 32. "Biological Rhythms and Cycles." Nathaniel Kleitman. Reprinted from Physiological Reviews. Vol. 29, No. 1, Jan., 1949. 30 pp. 1950.
No. 33. "Are There Periods in American Business Activity?" Edwin B. Wilson. Reprinted from Science. Vol. 80, No. 2070, Aug., 1934. Cycles. Vol. I, No. 4, pp. 33-39. Nov., 1950.
No. 34. "Cycles in Tree-Ring Widths." C. G. Abbot. Reprinted from Smithsonian Miscellaneous Collections. Vol. 95-19, 1935. Cycles. Vol. I, No. 5, pp. 28-32. Dec., 1950.
No. 35. "The Effect of Climate on Human Behavior in History." Raymond H. Wheeler. Reprinted from Transactions Kansas Academy Science. Vol. 46, 1943. Cycles. Vol. II, No. 1, pp. 22-40. Jan., 1951.
No. 36. "The Revolutions of Civilisation." W. M. Flinders Petrie. Harper and Brothers. London and New York, 1911. Cycles. Vol. II, No. 3, pp. 98-127. March, 1951. Ibid. Vol. VII, No. 4, pp. 89-120. April, 1956.
No. 37. "What May Be Learned from Stumps." E. L. Moseley. Reprinted from School Science and Mathematics. 1937. Cycles. Vol. II, No. 4, pp. 158-160. April, 1951.
No. 38. "A List of Rhythms Variously Determined and/or Alledged." A Booklet. 13 pp. 1949. Cycles. Vol. VII, No. 11, pp. 299-305. Nov., 1956.
No. 39. "Physical Factors of the Historical Process." A. L. Tchijevsky. Cycles. Vol. VIII, No. 2, pp. 29-51. Feb., 1957. See also Journal of Cycle Research. Vol. 5, No. 4, pp. 89-109. Oct., 1956.

Unnumbered Reprints

"Direct Relationship Between Earth's Magnetic Storms and Planet Positions is Discovered." Waldemar Klempffert. Reprinted from the New York Times. April 15, 1951. Cycles. Vol. II, No. 5, p. 170. May, 1951.
"Some Neglected Aspects of Accident Prevention." Rexford Hersey. Reprinted from Workers' Emotions in Shop and Home. Philadelphia, University of Pennsylvania Press, 1932. Cycles. Vol. III, No. 1, pp. 16-17. Jan., 1952.
"The Effect of Atmospheric Electricity Upon Business." Ellsworth Huntington. Reprinted from The Frontier. Dec., 1944. Cycles. Vol. III, No. 4, p. 130. April, 1952.
"The Bull Market, A 46-Month Cycle Indicator Sees Its End This Year." Veryl L. Dunbar. Reprinted from Barron's. June 30, 1952. Cycles. Vol. III, No. 8, pp. 265-266. Oct., 1952.
"A Cyclical Analysis, Industrial Common Stock Index, 1854-1951." Vedder Hughey. Cycles. Vol. IV, No. 3, pp. 79-98. March, 1953. Ibid. No. 4, pp. 123-130. April, 1953. Ibid. No. 5, pp. 157-162. May, 1953.
"The 14- to 16-Year Cycle in Beef Cattle Prices." Gordon B. Nance. Reprinted from Weekly Star Farmer. May 6, 1953. Cycles. Vol. IV, No. 10, pp. 338-339. Dec., 1953.
"Cycles of Economy and Waste and Cycles of Civilization." W. M. Flinders Petrie. Reprinted from Nature. Vol. 142, Oct. 1, 1948. Cycles. Vol. IV, No. 10. p. 343. Dec., 1953.
"The 3 1/2-Year Cycle in Conscience Money Paid by British Taxpayers." Reprinted from Financial Times. London, Nov. 17, 1954. Cycles. Vol. VI, No. 3, pp. 82-93. March, 1955.
"Cycles in Crime." J. Edgar Hoover. Reprinted from This Week. 1955. Cycles. Vol. VI, No. 7, pp. 209-212. Aug.-Sept., 1955.
"A Seasonal Cycle of Rainfall." Saville R. Davis. Reprinted from Christian Science Monitor. 1954. Cycles. Vol. VI, No. 9, pp. 281-285. Nov., 1955.
"Trends and Cycles in Masonic Membership in New York State and in Ionic Lodge." Joseph E. Appel. Reprinted from Masonic Outlook. Feb., 1953. Cycles. Vol. VII, No. 11, pp. 295-296. Nov., 1956.
"The Sampling Theory of Power Spectrum Estimates." John W. Tukey. Reprinted from Symposium on Applications of Autocorrelation Analysis to Physical Problems. Woods Hole, Massachusetts. June 13-14, 1949. Journal of Cycle Research. Vol. 6, No. 2, pp. 31-52. April, 1957.
"A 2 1/2-Year Demand Growth Cycle." C. R. Chapman. Reprinted from Electrical Engineering. Aug., 1957. Cycles. Vol.

IX, No. 5 & 6, pp. 120-121. May-June, 1958.
"Sunspot-Climate Relationships." Louis H. Bean. Reprinted from Journal of Meteorology. Feb., 1952. Cycles. Vol. IX, No. 10, pp. 266-267. Oct., 1958.
"Gray's Epicyclical Evolution." A. L. Kroeber. Reprinted from American Antropologist. Vol. 60, No. 1, Feb., 1958. Cycles. Vol. IX, No. 11, p. 172. Aug., 1959.
"Cycles in World Dominance." Donald S. Cooley. Reprinted from Mechnix Illustrated. Oct., 1944. Cycles. Vol. X, No. 8, p. 172. Aug., 1959.